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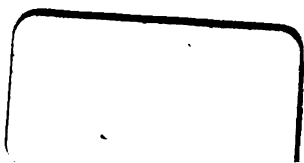
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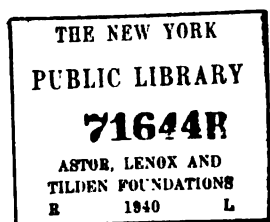
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OF THE
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OF
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AMERICAN GEOGRAPHICAL SOCIETY.

OFFICERS AND COUNCILLORS

1893.

OFFICERS:

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CHARLES P. DALY, LL.D.

Term expires 1894

VICE-PRESIDENTS

GEN. EGBERT L. VIELE

Term expires 1895

REV. C. C. TIFFANY, D.D.

Term expires 1896

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PROF. W. LIBBEY, JR.

Term expires 1894

DOMESTIC CORRESPONDING SECRETARY

JAMES MÜHLENBERG BAILEY

Term expires 1896

RECORDING SECRETARY

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Term expires 1895

TREASURER

WALTER R. T. JONES

Term expires 1894

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D. O. MILLS

LEVI HOLBROOK

MORRIS K. JESUP

Terms expire 1894

W. H. H. MOORE

ORLANDO B. POTTER

GUSTAV E. KISSEL

HENRY PARISH

CHANDLER ROBBINS

Terms expire 1895

JOHN A. HADDEN

WM. G. HAMILTON

HENRY HOLT

CLARENCE KING

WILLIAM REMSEN

Terms expire 1896

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CHARTER OF INCORPORATION.

GRANTED APRIL 13, 1854.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

SECTION 1. George Bancroft, Henry Grinnell, Francis L. Hawks, John C. Zimmerman, Archibald Russell, Joshua Leavitt, William C. H. Waddell, Ridley Watts, S. De Witt Bloodgood, M. Dudley Bean, Hiram Barney, Alexander J. Cotheal, Luther B. Wyman, John Jay, J. Calvin Smith, Henry V. Poor, Cambridge Livingston, Edmund Blunt, Alexander W. Bradford, and their associates, who are now or may become hereafter associated for the purposes of this act, are hereby constituted a body corporate by the name of "The American Geographical and Statistical Society," for the purpose of collecting and diffusing geographical and statistical information.

§ 2. For the purposes aforesaid, the said Society shall possess the general powers and privileges, and be subject to the general liabilities, contained in the third title of the eighteenth chapter of the first part of the Revised Statutes, so far as the same may be applicable, and may not have been modified or repealed; but the real and personal estate which the said Society shall be authorized to take, hold, and convey, over and above its library, and maps, charts, instruments, and collections, shall not at any time exceed an amount the clear yearly income of which shall be ten thousand dollars.

§ 3. The officers of said Society shall be a president, three vice-presidents, a corresponding secretary, a recording secretary, a librarian, and a treasurer, and such other officers as may from time to time be provided for by the by-laws of the said Society.

§ 4. The said Society, for fixing the terms of admission of its members, for the government of the same, for changing and altering

the officers above named, and for the general regulation and management of its transactions and affairs, shall have power to form a code of by-laws, not inconsistent with the laws of this State, or of the United States, which code, when formed and adopted at a regular meeting, shall, until modified or rescinded, be equally binding as this act upon the said Society, its officers, and its members.

§ 5. The Legislature may, at any time, alter or repeal this act.

§ 6. This act to take effect immediately.

STATE OF NEW YORK, }
Secretary's Office. } ss.:
.

I have compared the preceding with the original law on file in this office, and hereby certify the same to be a correct transcript therefrom, and of the whole of said original law.

Given under my hand and seal of office, at the city of Albany, this
[L. S.] thirteenth day of April, one thousand eight hundred and fifty-four.

A. G. JOHNSON,

Deputy Secretary of State.

AMENDED CHARTER.

PASSED APRIL 8, 1871.

STATE OF NEW YORK, NO. 237, IN SENATE. *March 7, 1871.*—
Introduced with unanimous consent, by Mr. Bradley ; read twice,
and referred to the Committee on Literature ; reported favorably
from said committee, and committed to the Committee of the
Whole.

CHAP. 373.

AN ACT in relation to The American Geographical and Statistical
Society.

PASSED April 8, 1871.

*The People of the State of New York, represented in Senate and
Assembly, do enact as follows :*

SECTION 1. The name or corporate title of the said Society shall
hereafter be The American Geographical Society of New York.

§ 2. The object of the said Society shall be the advancement of
geographical science ; the collection, classification and scientific
arrangement of statistics, and their results ; the encouragement of
explorations for the more thorough knowledge of all parts of the
North American continent, and of other parts of the world which
may be imperfectly known ; the collection and diffusion of geo-
graphical, statistical and scientific knowledge, by lectures, printed
publications, or other means ; the keeping up of a correspondence
with scientific and learned societies in every part of the world, for
the collection and diffusion of information, and the interchange of
books, charts, maps, public reports, documents, and valuable publi

cations ; the permanent establishment in the city of New York of an institution in which shall be collected, classified, and arranged, geographical and scientific works, voyages and travels, maps, charts, globes, instruments, documents, manuscripts, prints, engravings, or whatever else may be useful or necessary for supplying full, accurate, and reliable information in respect to every part of the globe, or explanatory of its geography, physical and descriptive ; and its geological history, giving its climatology, its productions, animal, vegetable, and mineral ; its exploration, navigation, and commerce ; having especial reference to that kind of information which should be collected, preserved, and be at all times accessible for public uses in a great maritime and commercial city.

§ 3. The power given by the act hereby accorded to the said Society, to take, hold, convey, manage, and make use of its real and personal estate, shall be understood as authorizing said Society to take and hold by gift, grant, bequest, devise, subject to all provisions of law relative to devises and bequests by last will and testament, or purchase real estate to the value of three hundred thousand dollars, and to invest its income, or its personal estate generally, so as to produce a regular annual income sufficient for the accomplishment of the purposes set forth in the first section of this act ; but said annual income shall not exceed twenty-five thousand dollars annually.

§ 4. The said Society shall make an annual report of its proceedings to the Legislature.

STATE OF NEW YORK, }
Office of Secretary of State. } ss.:

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom, and of the whole of said original law.

Given under my hand and seal of office, at the city of Albany, this twenty-
[L. s.] second day of May, in the year one thousand eight hundred and
seventy-one.

DIEDRICH WILLERS, JR.,

Deputy Secretary of State.

BY-LAWS

OF THE

AMERICAN GEOGRAPHICAL SOCIETY.

AS AMENDED FEBRUARY 15, 1892.

THE following By Laws are hereby established as the rules and ordinances of the American Geographical Society, and all other By-Laws, Rules and Regulations heretofore made are hereby repealed.

CHAPTER I.

MEMBERSHIP.

1. The Society shall consist of Fellows and of Honorary and Corresponding Members.

2. Honorary Members shall be chosen on account of their distinction in the science of geography, or of statistics, and not more than three of them shall be elected in any one year.

3. Corresponding Members shall be chosen from those who communicate valuable information to the Society and who have promoted the knowledge of geography, or of statistics.

4. Fellows, Honorary Members and Corresponding Members shall be elected by the Society as follows: All nominations of candidates shall be made in writing at a meeting of the Council by a member thereof. The names of persons thus nominated, if approved by the Council, shall be recommended to the Society for election at its next stated meeting.

5. The name of any Fellow or Member of the Society may, on the recommendation of the Council and by vote of a majority of the members present at a stated meeting of the Society, be dropped from the list; and the name of any Corresponding Member may be dropped from the list by vote of the Council, without reference to the Society.

CHAPTER II.

INITIATION FEE AND ANNUAL DUES.

1. Each Fellow of the Society shall, immediately on election, pay an initiation fee of ten dollars, which shall be considered to include his annual dues for the current year.
2. The annual dues of each Fellow thereafter shall be ten dollars, payable in advance on the 1st of January.
3. Any Fellow of the Society, not in arrears, may commute for life all dues, by the payment at one time of one hundred dollars.
4. The name of any Fellow of the Society who has neglected for two successive years to pay the annual dues, or who at any time refuses to pay them, may, by the Council, be dropped from the list.
5. The fiscal year of the Society shall be the calendar year commencing January 1 and ending December 31.
6. Honorary and Corresponding Members shall be exempt from payment of initiation fee and annual dues.

CHAPTER III.

OFFICERS.

1. The officers of the Society shall be a president, three vice-presidents, a foreign corresponding secretary, a domestic corresponding secretary, a recording secretary, a treasurer and fifteen councillors ; and these together shall form the Council of the Society.
2. All the officers above-named shall be elected by the Society at its annual meeting.
3. The president and treasurer shall each be elected for one year and until their successors have been elected ; and at each annual meeting there shall be elected one vice-president, one secretary, and five members of the Council, each for the term of three years and until their successors have been elected.
4. All officers to be elected may be voted for on one ballot.
5. Any Fellow of the Society, who has been such for twenty days and who is not in arrears for dues, shall be entitled to vote at the annual election.

CHAPTER IV.

ANNUAL MEETING.

1. The annual meeting of the Society shall be held on the second

Monday in January, or on any other day which may be designated by the Council for the purpose.

2. At the annual meeting the Council shall present a report of the proceedings of the Society during the past year, and the treasurer shall present his annual report.

CHAPTER V.

MONTHLY AND SPECIAL MEETINGS.

1. The Society, unless it is at any time specially ordered otherwise by the Council, shall hold a stated meeting for the transaction of business on the second Monday of each month except July, August, September and October.

2. The president, or, in his absence or incapacity, one of the vice-presidents, may, and upon the written request of the Council or of twenty-five members of the Society shall, call a special meeting of the Society by giving three days' notice thereof in two daily newspapers published in the city of New York.

CHAPTER VI.

ORDER OF BUSINESS.

1. At stated meetings of the Society the order of proceedings shall be:

Reading of the minutes.

Reports and communications from officers of the Society.

Communications from the Council.

Reports from committees.

Election of members.

Miscellaneous business.

Papers and Addresses.

2. All propositions presented to the Society at any meeting, for action, shall be in writing. A proposition thus presented, when seconded, shall be deemed to be in possession of the Society and open for discussion, but may be withdrawn by the mover at any time before amendment or decision.

3. No member shall speak more than five minutes, nor more than once, upon the same question, until all other members present have had an opportunity to be heard, nor more than twice on any question, unless leave is specially granted by the Society.

CHAPTER VII.**QUORUM.**

1. At meetings of the Society nine members present shall constitute a quorum.

CHAPTER VIII.**COMMITTEES.**

1. Each committee authorized by the Society shall consist of three members, who shall, unless otherwise ordered, be appointed by the chairman.

CHAPTER IX.**PRESIDING OFFICER.**

1. At all meetings of the Society, on the arrival of the appointed hour and the presence of a quorum, the president, or, in his absence, one of the vice-presidents, or, in the absence of all of these officers, a Fellow of the Society shall take the chair and call the meeting to order.

2. The chairman shall have only a casting vote. He shall preserve order and decide all questions of order, subject to an appeal to the Society. At every annual meeting, before the opening of the polls, he shall appoint two tellers of the election.

CHAPTER X.**SECRETARIES.**

1. It shall be the duty of the Foreign Corresponding Secretary to conduct the correspondence of the Society with individuals and associate bodies in foreign countries.

2. It shall be the duty of the Domestic Corresponding Secretary to conduct the correspondence of the Society with individuals and associate bodies in the United States.

3. In case of vacancy in the office of either of the corresponding secretaries, or in the absence or disability of either of these officers, the duties of either may be performed by the other secretary, or by the librarian.

4. The secretaries shall keep in books at the rooms of the Society copies of all letters written by them, and shall file at the said rooms all letters received by them on behalf of the Society.

5. At each stated meeting of the Council they shall respectively report their correspondence, and read the same or such parts thereof as may be required.

6. The Council may designate a particular officer, or appoint a committee, to prepare a letter or conduct a correspondence on any special subject.

7. It shall be the duty of the Recording Secretary to give due notice of all meetings of the Society and to attend the same. He shall keep adequate minutes of the proceedings of the Society. He shall give immediate notice to officers and committees of all votes, orders, resolves, and proceedings affecting them or pertaining to their respective duties. He shall at each annual election hand to the tellers a list of the members of the Society entitled to vote. He shall have charge of the seal of the Society and of the charter, by-laws, records and general archives, except so far as they may be placed by the Council in charge of others. He shall sign and affix the seal of the Society to all diplomas, deeds or other documents authorized by the Society or Council.

8. All documents in charge of the secretaries shall be kept at the rooms of the Society, unless otherwise specially ordered by the Council.

CHAPTER XI.

TREASURER.

1. The Treasurer shall have charge of all deeds, contracts, bonds, certificates, securities and muniments of title belonging to the Society. He shall collect all dues to the Society and keep the funds safely deposited in some incorporated bank or trust company approved by the Council.

2. Funds so deposited shall be drawn out only by check of the Treasurer, countersigned by the chairman of the Council, or by such other officer as may be designated by the Council for that purpose.

3. The Treasurer shall, prior to the annual meeting of the Society, prepare and submit to the Council for audit a detailed account of his receipts and disbursements during the past year, which account, duly audited and approved, he shall present to the Society at the annual meeting.

CHAPTER XII.

COUNCIL.

1. The Council shall have the management and control of the affairs, property, library, and funds of the Society, and shall transact all such business of the Society as is not required to be transacted by the Society at a stated meeting. It shall designate a bank or trust company in the city of New York in which the funds shall be deposited by the treasurer. It shall have charge of and edit all the publications of the Society.

2. It may adopt rules for its own government, not inconsistent with the charter and by-laws of the Society, and appoint such standing and special committees as it may deem proper, and define their duties. It shall appoint the librarians, clerks and other servants of the Society, and fix the powers, duties, privileges and compensation of each. But no appointment shall be made which shall not be revokable at the pleasure of the Council.

3. It shall have power to fill for the unexpired term any vacancy that may occur in its own body or in any of the offices of the Society, and it may declare a vacancy to exist in any office whenever the incumbent thereof is, by reason of absence or otherwise, incapable of performing its duties. It shall have power to declare vacant the seat of any member of its own body (except the president and vice-presidents), who shall have been absent from its meetings for three successive months.

4. The Council may for good cause remit the annual dues of any Fellow of the Society.

5. No member of the Council shall, directly or indirectly, receive any salary or pecuniary compensation for his services to the Society.

CHAPTER XIII.

ALTERATION OF BY-LAWS.

No alteration in these by-laws shall be made, unless proposed in writing at a stated meeting of the Society and referred to the Council for consideration, and approved by the Council and adopted by the Society at a subsequent meeting.

HONORARY AND CORRESPONDING MEMBERS AND FELLOWS.

HONORARY MEMBERS.

DUFFERIN and AVA, the Marquis of.	McCLINTOCK, Admiral Sir F. L., R.N.
ELDER, Sir Thomas, Adelaide, South Australia.	NARES, Rear-Admiral Sir George S., R.N., K.C.B.
ISMAIL, ex-Khedive of Egypt.	NORDENSKIÖLD, Baron A. E., Stock holm.
LAYARD, Sir Austin Henry, D.C.L.	RAWLINSON, Major-General Sir Henry C., K.C.B.
MARKHAM, Clements R., C.B., Presi- dent of the Royal Geographical Society.	

CORRESPONDING MEMBERS.

ABBE, Prof. Cleveland, Washington.	LUMHOLTZ, Carl, M.A., Christiania, Norway.
AMMEN, Rear-Admiral Daniel, U.S.N., Washington.	MACOMB, Col. A. Mason, Cairo.
BONAPARTE, Prince Roland, Paris.	MAUNOIR, Charles, Paris.
BOWEN, Rt. Hon. Sir George Ferguson, G.C.M.G., London.	MCCARTEE, D. Bethune, M.D., New York.
BREWER, Prof. Wm. H., New Haven.	NEGRI, Cristoforo, Turin.
BROWNLEE, Harrison J., C.E., Manitoba.	NEY, Count Napoléon, Paris.
CHAIX, Prof. Paul, Geneva, Switzerland.	PACKARD, Prof. A. S., Providence, R. I.
CHAIX, Prof. Emile, Geneva, Switzer- land.	PEET, Rev. S. D., Good Hope, Ill.
CORA, Prof. Guido, Turin.	PERALTA, Manuel M. de, Liege.
DAVIDSON, Prof. Geo., U. S. Coast and Geodetic Survey, San Francisco.	PUMPELLE, Prof Raphael.
DU CHAILLU, Paul B.	ROMERO, Matias, Envoy of Mexico at Washington.
GARDNER, Prof. James T., Albany.	STANLEY, Henry M.
GILLIODTS VAN SEVEREN, L., LL.D., Bruges.	TACHÉ, E. E., Asst. Commissioner of Crown Lands, Quebec.
GILMAN, Daniel C., LL.D., President Johns Hopkins University, Baltimore.	VINCENT, Frank, New York.
GOBAT, Dr. A., Nat. Councillor, Berne.	VIVIEN DE SAINT-MARTIN, Versailles.
LECLERCQ, Jules, Brussels.	WALKER, Gen. Francis A., LL.D., Boston.
LESSEPS, Ferdinand de, Paris.	WHITEHOUSE, Cope.
LONG, Col. C. Chaillé.	WRIGHT, Gen. Horatio G., U.S.A., Washington.
LUCE, Admiral S. B., U.S.N.	WYSE, Lieut.-Com. Lucien N. B., Paris.

FELLOWS.

CORRECTED TO DECEMBER 31, 1893.

Date of Election.

- | | |
|--|--|
| 1859 Arnoux, Hon. William H. | 1890 Alger, Horatio, Jr. |
| 1869 Auchmuty, Richard Tylden. | 1890 Ackermann, B. L.,
Inwood-on-the-Hudson, N. Y. |
| 1871 Atterbury, Rev. Wm. W., D.D. | 1891 Arms, Geo. |
| 1872 Allen, Horatio M.,
S. Orange, N. J. | 1891 Agar, John G. |
| 1874 Avery, Samuel P. (L. F.) | 1891 Adams, W. H. |
| 1874 Agnew, John T. (L. F.) | 1891 Atkinson, John B., Earlington, Ky. |
| 1874 Amy, Henry. (L. F.) | 1891 Armstrong, Collin. |
| 1874 Astor, Hon. W. W. (L. F.) | 1892 Adams, Cyrus C. |
| 1875 Amsinck, Gustav. | 1893 Alexander, W. T., M.D. |
| 1876 Appleton, Nathan, Boston. | 1852 Barney, Hiram. (L. F.) |
| 1879 Austin, William. | 1856 Baker, Francis. (L. F.) |
| 1879 Agostini, Joseph. | 1859 Boorman, J. Marcus (L. F.),
Brooklyn, N. Y. |
| 1881 Armour, Herman O. (L. F.) | 1859 Bernheimer, Isaac. |
| 1883 Ames, Adelbert, Highlands, N. J. | 1868 Banks, David. (L. F.) |
| 1883 Aub, Albert. | 1868 Bennett, James Gordon. |
| 1883 Atterbury, J. T. (L. F.) | 1868 Bernheimer, Adolph. |
| 1883 Aikman, Walter M. | 1868 Bernheimer, Simon. |
| 1883 Adams, William. | 1869 Bailey, Jas. Mühlenberg. (L. F.) |
| 1884 Abbott, Frank, M.D. | 1869 Banyer, Goldsboro. |
| 1885 Agnew, Andrew G. | 1869 Bickmore, Prof. A. S. |
| 1885 Adams, C. H. | 1869 Bierstadt, Albert. (L. F.) |
| 1886 Appleton, Wm. H. | 1872 Brown, Walston H. |
| 1886 Agassiz, Prof. Alex.,
Cambridge, Mass. | 1874 Bishop, D. W. (L. F.) |
| 1886 Allen, Chas. Slover, M.D. | 1874 Bien, Julius. |
| 1886 Alden, R. Percy. | 1874 Bissinger, Philip. |
| 1887 Andrews, Wm. L. | 1874 Backus, Henry C. (L. F.) |
| 1887 Archbold, John D. (L. F.) | 1874 Baldwin, Townsend B. (L. F.),
Tuxedo Park, N. Y. |
| 1887 Allen, Timothy Field. | 1874 Barnes, John S. |
| 1888 Alexander, J. F. | 1874 Bonner, Robert. |
| 1889 Atkinson, C. F., Boston. | 1874 Benjamin, John. |
| 1889 Adams, Hon. Geo. E., Chicago. | 1874 Butler, William Allen. |
| 1889 Amory, Wm. N. | 1874 Barr, William. |
| 1889 Atkinson, Hoffman, Anniston, Ala. | 1874 Belding, Milo M. |
| 1889 Armstrong, David W. | 1874 Bookstaver, Hon. Henry W. |
| 1889 Abbot, Edwin H. (L. F.), Boston. | 1874 Brownson, Commander W. H.
U. S. N. (L. F.) |
| 1890 Andreini, J. M. | 1875 Barney, Charles T. |
| 1890 Astor, John J. | |
| 1890 Anderson, Arthur A. (L. F.) | |

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- 1888 Bacon, Lathrop R.
1888 Bogert, Henry L.
1888 Beers, M. H.
1888 Barstow, J. Whitney, M. D.,
Flushing, N. Y.
1889 Benson, James H.
1889 Barnes, Thurlow Weed, Boston.
1889 Bromberg, Fredk. G., Mobile, Ala.
1889 Bentley, Norman S.
1889 Brimmer, Martin, Boston.
1889 Biddle, Edward R.
1889 Bigelow, Poultney. (L. F.)
1889 Baring, Thos.
1889 Bissell, Arthur F.
1889 Brown, Wm. Reynolds.
1889 Baldwin, W. D.
1889 Bleything, Geo. Dacre, M.D.
1889 Bidwell, Chas. E.
1889 Bidwell, D. H.
1889 Browning, J. H. Brower, M.D.
1890 Bliss, D. L. (L. F.),
Carson City, Nev.
1890 Benedict, Jas. H.
1890 Barnard, Jno. F., Cincinnati, O.
1890 Brooker, Chas. F.,
Torrington, Conn.
1890 Bertschmann, J., Swiss Consul.
1890 Bushnell, Jos.
1890 Bergen, Jas. C.
1890 Boyd, Jno. Scott. (L. F.)
1890 Brackenridge, G. W. (L. F.),
San Antonio, Tex.
1890 Brewster, C. O.
1891 Booth, Edwin. (L. F.)
1891 Bernheim, Gustav.
1891 Babcock, Stephen E.,
Little Falls, N. Y.
1891 Belin, Henry, Jr., Scranton, Pa.
1891 Boies, H. M., Scranton, Pa.
1891 Barber, Amzi L.
1891 Besly, Chas. Howard, Chicago.
1891 Brice, Hon. Calvin S.
1891 Bogue, Virgil G., Chicago.
1891 Bendit, Louis A.
1891 Bell, Ed. W.
1891 Burtis, Ed. H.
1891 Blanchard, Jas. A.
1892 Brandreth, Wm.
1892 Beavan, Jeffrey.
1893 Birdsall, Mrs. W. R.
1893 Brigham, Edward Morris,
Battle Creek, Mich.
1852 Colton, Joseph H. (L. F.)
1856 Cooper, Hon. Edward.
1868 Catlin, N. W. Stuyvesant. (L. F.)
1868 Chapman, Joseph H.
1870 Conklin, William A.
1872 Conklin, Edward E. (L. F.)
1872 Clark, E. V.
1874 Campbell, Allan.
1874 Church, Col. George E. (L. F.),
London, Eng.
1874 Comstock, Cornelius.
1874 Constable, James M.
1874 Crocker, David.
1874 Crosby, Hon. J. Schuyler.
1874 Colgate, James B.
1874 Constantine, Andrew J.
1874 Conyngham, Wm. L. (L. F.)
1874 Crocker, Geo. A.
1874 Chickering, George H.,
Boston, Mass.
1875 Clendenin, J. W.
1875 Cameron, Sir Roderick W. (L. F.)
1875 Cooper, George C. (L. F.)
1876 Curtis, Benj. L.
1879 Coddington, Gilbert S. (L. F.)
1879 Childs, George W.,
Philadelphia, Pa.
1880 Calvin, Delano C.
1880 Cohen, Maurice S.
1881 Clinton, Henry L. (L. F.)
1882 Clarkson, Banyer. (L. F.)
1882 Coudert, F. R., LL.D.
1882 Conkling, Rev. N. W., D.D.
1883 Chapman, Henry E. (L. F.)
1883 Clyde, W. P.

- 1883 Clews, Henry.
 1884 Clafin, John. (L. F.)
 1884 Carey, Henry T.
 1884 Connor, W. E. (L. F.)
 1886 Conger, Clarence R.
 1886 Cooke, Henry C.
 1886 Coffin, Edmund, Jr.
 1886 Church, Benjamin S.
 1886 Corthell, E. L., Chicago.
 1886 Clarke, Stephen G.
 1886 Carter, Henry C.
 1886 Colvin, Verplanck (L. F.),
 Albany, N. Y.
 1886 Clarke, C. C.
 1886 Calder, George.
 1886 Camp, Hugh N.
 1886 Chauncey, Elihu. (L. F.)
 1887 Clark, Jefferson.
 1887 Cheney, Alfred C.
 1887 Cannon, H. W.
 1887 Conover, A. E.
 1887 Cranitch, Wm. I. A.
 1887 Compton, A. T.
 1887 Cleveland, Clement, M.D.
 1888 Colgate, Abner W.
 1888 Crimmins, John D.
 1888 Cotheal, Alex. I. (L. F.)
 1888 Chase, George.
 1888 Coutan, Adolphe R. (L. F.)
 1888 Coutan, Chas. Albert. (L. F.)
 1888 Clark, Alfred Corning. (L. F.)
 1888 Cook, Henry H.
 1888 Canda, Chas. J.
 1888 Coleman, James S.
 1888 Cross, Richard J.
 1888 Chapin, Fred'k H.,
 Hartford, Conn.
 1888 Chrystie, Wm. F.
 1888 Chisolm, George E.
 1888 Cochran, Wm. F. (L. F.)
 1889 Coxe, Henry B. (L. F.)
 1889 Clark, Chas. F.
 1889 Crane, Chas. R., Chicago.
 1889 Clausen, George C.
 1889 Comstock, Geo. Carlton.
 1889 Cole, Eugene M.
 1889 Carter, John J. (L. F.),
 Titusville, Pa.
 1890 Chanler, Wm. Astor.
 1890 Carter, A., Jr.
 1890 Coles, Edwin S.
 1890 Cockcroft, Miss Mary T.
 1890 Carnrick, Jno.
 1890 Clemens, Harold.
 1890 Cleveland, Hon. Orestes,
 Jersey City, N. J.
 1891 Cohen, Sam'l M.
 1891 Cogswell, W. B., Syracuse.
 1891 Clapp, Geo. H., Pittsburg.
 1891 Cook, J. Hervey,
 Fishkill-on-Hudson.
 1891 Cooper, John.
 1891 Calhoun, W. H., Jr.,
 Butte City, Mont.
 1892 Comer, John H.
 1893 Coolidge, J. Randolph, Boston.
 1893 Crawford, Francis.
 1893 Croswell, J. G.
 1893 Cummings, Thos. H., Boston.
 1855 Daly, Charles P., LL.D. (L. F.)
 1856 Douglass, Andrew E.
 1856 Dodge, Wm. E.
 1856 Detmold, Wm., M.D.
 1866 Darling, Hon. Wm. A.
 1871 Daly, Hon. Joseph F.
 1873 Delano, Franklin H. (L. F.)
 1874 dePeyster, Gen. J. Watts. (L. F.)
 1874 Dutilh, Eugène.
 1874 Delafield, M. L.
 1874 Dana, Charles A.
 1874 Du Bois, Wm. A.
 1874 Dunscombe, Richard T. (L. F.)
 1874 Dun, R. G.
 1875 Davies, Julien T.
 1875 Davison, Charles A.
 1875 de Peyster, Frederic J. (L. F.)
 1875 Dommerich, L. F.

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|--|--|
| 1877 Davis, Joseph Beale (L. F.),
Orange, N. J. | 1889 Dupont, Col. H. A., Wilmington,
Del. |
| 1878 di Cesnola, Gen. L. P. | 1889 Daley, Geo. H. |
| 1879 Dahlgren, Charles B.,
Trenton, N. J. | 1889 Deal, W. E. F., Virginia City, Nev. |
| 1880 Deane, John H. (L. F.) | 1889 Donald, Peter. (L. F.) |
| 1880 Dyckman, Isaac M. | 1889 Dexter, Julius, Cincinnati. |
| 1880 Du Bois, Frederick N. | 1889 Dix, J. Augustus, Elizabeth, N. J. |
| 1880 Dexter, Henry. (L. F.) | 1890 Douglas, O. B., M.D. |
| 1880 Deen, Wm. M. (L. F.) | 1890 Davis, Hon. John,
Washington. D. C. |
| 1881 Davies, H. B. | 1890 Dellinger, Chas. F. |
| 1881 Docharty, Augustus T. (L. F.) | 1890 Davis, Robt. T., M.D.,
Fall River, Mass. |
| 1882 Dunlap, Robert. (L. F.) | 1890 Dinsmore, C. Gray (L. F.) |
| 1883 Donnell, E. J. (L. F.) | 1890 DuVivier, C. A. |
| 1883 Decker, Jos. S. | 1891 Drey, Max. |
| 1884 Davis, Howland. | 1891 Doane, W. H., Cincinnati. |
| 1884 Day, Henry. | 1891 Davids, Chas. H. |
| 1884 Donnelly, Thomas F. | 1891 Dillingham, Thos. M., M.D. |
| 1884 Dalley, Henry, Jr. | 1892 Daniels, W. L., Bayonne, N. J. |
| 1884 Douglas, Jas. | 1892 Draper, Mrs. Henry. |
| 1885 Dupré, Ovide. (L. F.) | 1892 DeBuys, A. |
| 1885 De Witt, George G. | 1893 Daniels, George H. |
| 1886 Dix, Rev. Morgan, D.D. | 1893 Dodson, Robt. Bowman. |
| 1886 de Lancey, Edward F. (L. F.) | |
| 1886 Dayton, Chas. W. | 1859 Evarts, Hon. William M. |
| 1887 Dickson, John. | 1868 Emmet, Thomas Addis, M.D. |
| 1887 Day, Prof. Edward H. | 1874 Eaton, Prof. D. Cady,
New Haven, Conn. |
| 1887 de Forest, George B. | 1875 Ellis, John W. |
| 1887 Davenport, W. F., M.D. | 1875 Eimer, Charles. |
| 1887 Dodman, Alfred C. | 1875 Ely, Richard S. |
| 1887 Donald, James M. | 1877 Elderkin, John. |
| 1887 Doudge, James R. (L. F.) | 1878 Ellis, John, M.D. |
| 1888 Davidson, Prof. Thos. | 1879 Earle, Ferdinand P. |
| 1888 Dunham, James H. | 1879 Elliott, Samuel. (L. F.) |
| 1888 Drexel, A. J., Philadelphia, Pa. | 1880 Eckert, Gen. Thomas T. |
| 1888 Drexel, Mrs. Joseph W. | 1882 Easton, Nelson S. |
| 1888 Davenport, Hon. Ira (L. F.),
Bath, N. Y. | 1882 Ellis, Wilbur Dixon. |
| 1888 Dyer, E. Tiffany. | 1882 Edwards, Hon. J. Pierrepont. |
| 1889 Day, Thomas. | 1882 Emerson, J. W. (L. F.) |
| 1889 De Zeller, John R. | 1882 Emmons, John. |
| 1889 Dodd, S. C. T. | 1882 Earle, Joseph P. (L. F.) |
| 1889 Durkee, Eugene W. | 1883 Eno, Amos F. |
| 1889 Dwight, Jonathan, Jr., M.D. | |

- 1883 Eyre, Maynard C.
1885 Elmore, Hon. J. Federico.
1886 Easton, Robt. T. B. (L. F.)
1886 Ellis, Geo. W.
1886 Edwards, Walter.
1887 Eckert, Wm. H.
1887 Elkins, Hon. S. B.
1887 Eastman, Timothy C.
1887 Egleston, Melville.
1888 Edgecombe, Daniel W.
1888 Edmunds, Hon. George F.,
Burlington, Vt.
1889 Eldridge, Edward, Whatcom, Wash.
1889 Emmet, Wm. T., Pelham, N. Y.
1889 Elliot, Mrs. M. Schuyler, Brooklyn.
1890 Ewing, Jay.
1890 Enos, Alanson T.
1891 Eustis, W. E. C., Boston.
1891 Edgerton, E. D., Helena, Mont.
1891 Eyerman, John, Easton, Pa.
- 1856 Field, Hon. David Dudley.
1856 Field, B. H. (L. F.)
1857 Fish, Hon. Hamilton.
1860 Field, Rev. H. M.
1864 Faile, Thomas H.
1871 Fliess, Wm. M.
1873 Freedman, Hon. John J.
1874 Farragut, Loyall.
1874 Fleet, Oliver S.
1874 Fox, Austen G. (L. F.)
1875 Fargo, James C.
1875 Fuller, Charles D.
1875 Ford, James B.
1875 Folsom, George W.
1880 French, Hon. Stephen B.
1881 Fearing, William H.
1882 Fairbanks, Leland.
1882 Fellows, Charles H.
1883 Fisher, Eustace W., M.D. (L. F.)
1884 Frazer, Alfred.
1886 Flagler, H. M. (L. F.)
1887 Fitzgerald, Louis.
1887 Fairfax, Hamilton R.
- 1887 Floyd, John Gelston.
1887 Fellows, Gordon.
1888 Fish, Nicholas.
1888 Ferguson, Walton (L. F.),
Stamford, Conn.
1889 Felton, Thos. Cary, Boston.
1889 Frazar, Everett.
1889 Fenton, David W. (L. F.)
1889 Freeland, Theodore H.
1889 Flint, Chas. R.
1889 Freeman, Wm. C., Cornwall, Pa.
1889 Fisher, Robt. C.
1889 Fitzpatrick, Chas. J.
1889 Forman, Prof. Geo., Newark, N. J.
1890 Fairbanks, Franklin,
St. Johnsbury, Vt.
1890 Fellowes, F. Wayland,
New Haven, Conn.
1890 Ferrero, Gen. Leopoldo.
1890 Fairchild, Hon. Chas. S.
1890 Farnam, Henry W.,
New Haven, Conn.
1890 Fearing, Daniel B. (L. F.),
Newport, R. I.
1891 Fleming, Harry S.,
Memphis, Tenn.
1891 Ferguson, Robt. W.
1891 Fitz, Eustace C., Boston.
1891 Ferguson, J. W., Paterson, N. J.
1892 Fairchild, Samuel W.
1893 Fielde, Adèle M.
- 1856 Greenwood, Isaac J.
1857 Greene, John W., M.D. (L. F.)
1868 Gebhard, Wm. H. (L. F.)
1868 Gerry, Elbridge T. (L. F.)
1868 Green, Andrew H.
1872 Gerard, James W.
1872 Grinnell, R. M. (L. F.),
Skaneateles, N. Y.
1874 Gunther, F. F.
1874 Gibbs, Theodore K. (L. F.)
1877 Guleke, H. F., M.D.
1879 Graves, Arthur B. (L. F.,

- 1879 Gay, Joseph E.
 1881 Gallaway, R. M.
 1881 Green, George. (L. F.)
 1881 Grace, Hon. William R. (L. F.)
 1881 Garland, James A.
 1882 Gardiner, J. Grahame.
 1883 Greenough, John. (L. F.)
 1883 Goodridge, John C., Jr. (L. F.)
 1885 Glazier, Simon W.
 1885 Gibson, George Rutledge.
 1886 Gallatin, Frederic.
 1886 Grummon, J. Ward.
 1886 Georger, Louis F.
 1886 Gunther, W. H., Jr.
 1886 Gunther, Franklin L. (L. F.)
 1886 Gunther, Ernest Rudolph.
 1886 Goodwin, James J. (L. F.)
 1886 Grant, James.
 1886 Godkin, E. L.
 1887 Goodridge, Frederic.
 1887 Grosvenor, Jas. B. M. (L. F.)
 1887 Gould, George J.
 1887 Gossler, Gustav H.
 1887 Griswold, John N. A.
 1888 Goodwin, C. Ridgely,
 Baltimore, Md.
 1888 Goodwin, Chas. S.
 1888 Greene, Byron W.
 1888 Gard, Anson A.
 1888 Grafton, Joseph.
 1889 Gillis, Chas. J.
 1889 Gurnee, Augustus C.
 1889 Gage, E. B. (L. F.),
 Tombstone, Arizona.
 1889 Gilbert, G. K., Washington, D. C.
 1889 Gargiulo, Joseph A.
 1889 Gardner, John L. (L. F.), Boston.
 1889 Gest, Erasmus (L. F.),
 Cincinnati, Ohio.
 1890 Goldthwaite, Wm. M.
 1890 Garden, Hugh R.
 1890 Godfrey, Chas. H.
 1890 Goldthwaite, Jas. C.
 1891 Galloupe, Chas. W., M.D.,
 Boston, Mass.
- 1891 Greene, David M., Troy, N. Y.
 1891 Gottlieb, Dr. J. Adelphi.
 1891 Gay, Edward, Mt. Vernon, N. Y.
 1892 Greenwood, Langdon, Jr.
 1892 Gutteridge, Rev. John A.,
 Newark, N. J.
 1893 Gilbert, J. H. Grenville (L. F.),
 Ware, Mass.
- 1856 Hewitt, Hon. Abram S.
 1859 Havemeyer, John C. (L. F.)
 1864 Hammond, Henry B. (L. F.)
 1868 Huntington, Daniel. (L. F.)
 1868 Hall, Elial F.
 1869 Hadden, John A. (L. F.)
 1871 Hand, Clifford A.
 1872 Holbrook, Levi. (L. F.)
 1873 Havemeyer, Hon. Theo. A.
 1874 Hurlbut, Henry A. (L. F.)
 1874 Haydock, George G.
 1874 Haines, John P.
 1874 Hinton, John H., M.D. (L. F.)
 1874 Holbrook, Edmund F.
 1874 Hendricks, Edmund.
 1874 Hendricks, Joshua.
 1874 Hatch, Rufus.
 1874 Huntington, C. P. (L. F.)
 1874 Hoyt, Harlow M.
 1876 Holt, Henry.
 1876 Hoes, Wm. M.
 1876 Hatfield, J. B. T.
 1878 Hinman, Wm. K.
 1878 Hitchcock, Hiram. (L. F.)
 1879 Hamilton, Wm. G.
 1879 Harris, Col. Robert.
 1881 Hinman, Russell.
 1882 Hascall, Theodore F.
 1882 Higginson, James J.
 1883 Hotchkiss, Horace L.
 1883 Hebert, Henry B. (L. F.)
 1883 Hyde, E. Francis.
 1883 Hurry, Edmund Abdy. (L. F.)
 1883 Hoyt, Alfred M. (L. F.)
 1885 Hubbard, Walter, Meriden Ct.

Fellows.

XXV

- 1885 Homer, Charles S., Jr.
1885 Henry, Edward L.
1886 Hoe, Robert.
1886 Huidekoper, Arthur C.,
Meadville, Pa.
1886 Henderson, Harold G.
1886 Hoyt, Colgate.
1886 Hoffman, Rev. Eugene A., D.D.
1886 Hawley, E. Judson.
1886 Hildreth, David M.
1886 Hitchcock, Bradford W.
1886 Hillhouse, Thomas G.
1887 Hinchman, Walter.
1887 Hastings, Prof. Thos. S., D.D.
1887 Huntington, George S., M.D.
1887 Hague, James D.
1887 Hurd, S. H., M.D.,
Skaneateles, N. Y.
1887 Hunker, Lieut. J. J., U. S. N.
1887 Hopping, A. Howard.
1887 Hayes, Richard Somers.
1887 Howell, Theodore D.
1887 Hill, James K.
1887 Hoadly, Hon. George.
1887 Holbrook, Edward.
1888 Hard, Anson W.
1888 Hoyt, Henry R. (L. F.)
1888 Hathaway, Horatio,
New Bedford, Mass.
1888 Hammond, Charles E.
1888 Hayward, James W.
1888 Higley, Hon. Warren.
1888 Harbeck, Chas. T., Islip, N. Y.
1889 Huntington, Chas. P. (L. F.)
1889 Hinrichs, C. F. A.
1889 Haynes, Prof. Henry W., Boston.
1889 Hastings, W., Wilmington, Del.
1889 Hurtt, Frank D. (L. F.)
1889 Harden, Hon. Wm. D.,
Savannah, Ga.
1889 Hayden, Brace.
1889 Harper, Orlando M.
1889 Hazard, Rowland,
Peacedale, R. I.
1889 Hubbard, Gardiner G.,
Washington, D. C.
1889 Hamilton, Edmond Horace.
1889 Hendrie, Wm. C.
1889 Hallidie, A. S., San Francisco.
1889 Hitchcock, Welcome G. (L. F.)
1889 Hogg, T. Egerton.
1889 Hoagland, C. N., M. D. (L. F.),
Brooklyn.
1889 Hayward, John H.
1889 Harrower, H. D.
1889 Howells, Henry C.
1889 Hain, Frank K.
1889 Halsted, James M.
1889 Harper, Edward B.
1889 Henley, Wm. I.
1890 Hill, James J., St. Paul, Minn.
1890 Harriman, J. Arden.
1890 Husted, Seymour L., Jr.
1891 Henderson, Joseph J.,
Kingsbridge, N. Y.
1891 Hall, John H., Hartford, Conn.
1891 Haas, Kalman.
1891 Herrman, A.
1891 Hazard, Fred'k R., Syracuse.
1891 Harrison, Alex.
1891 Howe, J. Morgan, M.D.
1892 Hyde, Clarence M.
1892 Haskins, Chas. H.
1893 Holden, E. F., Syracuse.
1893 Hurlbut, Theo. D., Brooklyn.
1893 Hitchcock, Henry, St. Louis.
1893 Holland, Geo. W.
1893 Holls, Fred'k Wm.
1893 Hardaway, W. A., M.D.
1893 Huntington, Archer M.
1859 Ireland, John B.
1874 Iselin, Adrian, Jr.
1881 Ives, Brayton. (L. F.)
1886 Irving, John Treat.
1887 Isham, Charles. (L. F.)
1887 Insee, Samuel.
1887 Ivison, David B. (L. F.)

- 1888 Irving, Cortlandt.
 1889 Ickelheimer, Isaac.
 1890 Irving, Walter.
- 1852 Jay, Hon. John. (L. F.)
 1852 Jones, John D. (L. F.)
 1871 Jones, Walter R. T.
 1874 Judson, Wm. D.
 1874 Jesup, M. K. (L. F.)
 1874 Jenkins, Wm. L.
 1874 James, D. Willis.
 1874 Jaffray, Robert.
 1879 Jay, William.
 1880 Jewett, George L. (L. F.)
 1881 Jewett, Hugh J.
 1881 Johnson, Bradish, Jr.
 1882 Jasper, John.
 1883 Judson, A. M.
 1885 Juilliard, A. D.
 1886 Janeway, Henry L.,
 New Brunswick, N. J.
 1886 Jacobi, A., M.D.
 1886 Jennings, O. B.
 1886 Jackson, Rev. Samuel M. (L. F.)
 1887 Jenkins, Augustus S.
 1888 Jones, Oliver L. (L. F.)
 1889 Jayne, Frank A.
 1890 James, Walter B., M.D.
 1890 Johnes, Edward R.
 1890 Janin, Henry.
 1891 Jaques, W. H.,
 South Bethlehem, Pa.
 1891 Jones, Washington,
 Philadelphia.
- 1891 Jaffray, Robt.
 1893 Johnson, Reverdy, Baltimore.
 1893 Jenkins, Michael, Baltimore.
 1893 Julien, Alexis A.
- 1869 Kelly, Eugene.
 1873 Kennan, George (L. F.),
 Washington, D. C.
 1874 King, Edward.
 1874 Kearny, Joseph R.
- 1874 Kunhardt, Henry R.
 1874 Kingsland, Wm. M. (L. F.)
 1874 Keck, Thomas.
 1876 Knauth, Percival. (L. F.)
 1877 King, Clarence. (L. F.)
 1878 Kernochan, Jas. Lorillard. (L. F.)
 1879 Kane, S. Nicholson.
 1880 Keene, James R. (L. F.)
 1881 Kennedy, John S. (L. F.)
 1881 Kane, Grenville. (L. F.)
 1881 Kirsch, Louis, Brooklyn, N. Y.
 1882 King, Le Roy (L. F.),
 Newport, R. I.
 1882 King, George Gordon (L. F.),
 Newport, R. I.
 1882 King, Vincent C. (L. F.)
 1883 Knapp, S. P.
 1883 Kerr, Walter.
 1883 King, D. H., Jr.
 1884 Kahn, Dr. Hermann.
 1885 Keppler, Rudolph. (L. F.)
 1886 Kurtz, William.
 1886 Kendall, Edward H.
 1886 Kidder, Camillus G. (L. F.)
 1887 Knight, George T. (L. F.)
 1887 Kevan, William.
 1888 Kelly, Edward. (L. F.)
 1888 Kissel, Gustav E.
 1888 Kellogg, Charles, Athens, Pa.
 1888 Kennedy, H. Van Rensselaer.
 1889 Kauffmann, S. H.,
 Washington, D. C.
 1889 Keogh, Martin J., Pelham, N. Y.
 1889 Kimball, F. J. (L. F.),
 Philadelphia.
- 1889 Kobbe, Walter.
 1890 Kempton, C. W.,
 Oro Blanco, Arizona.
 1891 Kissel, Rudolph H.
 1892 King, John Hurtin.
 1893 King, Thos. M., Baltimore.
 1893 Kelly, Edmond.
 1893 Kane, Henry Brevoort. (L. F.)

- 1852 Livingston, Cambridge. (L. F.)
 1857 Low, Abiel A. (L. F.)
 1859 Lathers, Richard. (L. F.)
 1869 Lawrence, John S. (L. F.)
 1870 Loew, Hon. Frederick W. (L. F.)
 1870 Lyman, Edward H. R.
 1871 Letson, Robert S.
 1872 Libbey, William. (L. F.)
 1874 Langdon, Walter (L. F.),
 Hyde Park, N. Y.
 1874 Lorillard, Pierre. (L. F.)
 1874 Littlejohn, James,
 Brooklyn, N. Y.
 1874 Le Comte, Joseph.
 1874 Lawson, Leonidas M.
 1874 Leshner, Stephen R.
 1875 Low, Hon. Seth. (L. F.)
 1875 Lawrence, George N.
 1876 Low, A. Augustus. (L. F.)
 1878 Loubat, J. F., LL.D. (L. F.)
 1878 Leon, Néstor Ponce de.
 1880 Lee, William H.
 1881 Libbey, Prof. William, Jr. (L. F.),
 Princeton, N. J.
 1881 Langdon, Woodbury G. (L. F.)
 1881 Little, Hon. Joseph J. (L. F.)
 1882 Langdon, Woodbury.
 1882 Lamont, Lansing.
 1882 Lapham, Lewis H.
 1882 Lamborn, Robert H.
 1883 Lourie, J.
 1883 Lummis, William.
 1883 Lounsbery, R. P.
 1886 Leete, C. H.
 1886 Ludington, C. H. (L. F.)
 1886 Lee, Wm. H. L.
 1887 Littlefield, Frederick M.
 1887 Lewis, James F.
 1887 Logan, Walter S.
 1887 Lodge, Hon. Henry Cabot,
 Boston, Mass.
 1887 Lovell, John W.
 1887 Loomis, Alfred L., M.D.
 1888 Lespinasse, George S.
 1888 Lancaster, R. A.
 1888 Lynch, James D. (L. F.)
 1888 Lawton, James M. (L. F.)
 1888 Lawson, James.
 1889 Lewis, Richard V.
 1889 Lovell, Frank H., Brooklyn.
 1889 Law, Walter W.
 1889 Lydig, David.
 1889 Lowthian, Thos., Denver, Colo.
 1889 Lockman, Jacob K.
 1890 Loth, Joseph. (L. F.)
 1890 Lamberton, Chas. L.
 1891 Levin, Mrs. Wm.
 1891 Levine, Julius.
 1891 Levy, Lewis S.
 1891 Loewy, Benno.
 1891 Leavitt, E. D.,
 Cambridgeport, Mass.
 1891 Lewis, Enoch, Philadelphia.
 1891 Lansing, Abraham (L. F.),
 Albany.
 1892 Lawrence, E. A.
 1893 Learned, Hon. Wm. L., Albany.
 1856 Monroe, Ebenezer, Southport, Ct.
 1859 MacMullen, Prof. John. (L. F.)
 1859 Morrell, Wm. H. (L. F.)
 1859 Moore, Frank. (L. F.)
 1863 Moore, W. H. H. (L. F.)
 1864 Morton, Hon. Levi P. (L. F.)
 1868 Morrison, Henry.
 1868 Martin, Isaac P.
 1868 Marquand, Henry G. (L. F.)
 1872 Meyer, F. William.
 1872 Marié, Peter. (L. F.)
 1873 Moore, C. B.
 1874 Morris, Henry L. (L. F.)
 1874 Marble, Manton.
 1874 Morgan, W. F.
 1874 Moir, James.
 1874 Morgan, J. Pierpont. (L. F.)
 1874 McAlpin, David H.
 1874 Merrill, William J. (L. F.)
 1875 Mitchell, Edward.

- 1875 Marcus, Arnold.
 1875 Magoun, George C.
 1875 Maclay, Moses B.
 1875 Martin, Bradley. (L. F.)
 1875 McLanahan, Geo. William.
 1876 Mitchell, W. Howard.
 1878 Musgrave, Thomas B. (L. F.)
 1878 Mason, Lieut. T. B. M.,
 U. S. N. (L. F.)
 1879 Motz, Ferdinand.
 1879 Miller, John Bleecker.
 1880 Mills, D. O. (L. F.)
 1880 Massey, Wm. M.
 1882 Marquand, John P.
 1882 McWilliam, John.
 1882 Mead, Erastus F.
 1882 Markoe, F. H., M.D. (L. F.)
 1883 Mackay, Donald. (L. F.)
 1883 McCreery, James. (L. F.)
 1883 Morgan, E. D.
 1883 Mali, Charles.
 1884 Moore, Joseph, Jr. (L. F.),
 Philadelphia, Pa.
 1884 MacKellar, Wm. (L. F.)
 1885 Mackenzie, D. E.
 1885 Morison, George S. (L. F.),
 Chicago.
 1886 Muñoz, J. M. (L. F.)
 1886 Murray, James B.
 1886 Moore, John G.
 1886 Moses, Raphael J., Jr.
 1886 Macklin, John J.
 1886 Morgan, N. Denison.
 1887 Morgan, Wm. Fellowes. (L. F.)
 1887 Malcolm, William L.
 1887 Mitchell, Hubbard W., M.D.
 1887 Macy, Isaac A.
 1887 McCourt, P. J., M.D.
 1887 Mack, Jacob W.
 1887 Mali, Henry W. T.
 1887 Moulton, Franklin W.
 1887 Montgomery, Warwick E.
 1887 McCready, N. L.
 1887 Morton, Alexander L.
 1888 Marquand, Henry. (L. F.)
 1888 Morgan, Rev. D. Parker.
 1888 Mason, Alex. T. (L. F.)
 1888 Malcolm, Chas. E.
 1888 Moss, Mrs. J. Osborne,
 Sandusky, O.
 1888 Mayo, Dr. Wm. Starbuck.
 1888 Myers, Theodore W.
 1888 Mather, Samuel, Cleveland, O.
 1888 McGill, Geo. W.,
 Riverdale-on-Hudson, N. Y.
 1888 Moore, Cary W.
 1888 Martin, Oswald J. (L. F.),
 Whitehouse, N. J.
 1888 McGee, James.
 1888 McKeever, J. Lawrence.
 1889 Martin, Robt. C.
 1889 McCormick, Hon. R. C.,
 Jamaica, N. Y.
 1889 Mead, Edwin H.
 1889 McFarland, Wm. W.
 1889 McBryde, J. M., Blacksburg, Va.
 1889 Mayes, Edward, Jackson, Miss.
 1889 Milliken, James.
 1889 Maitland, Alexander. (L. F.)
 1889 Macdonough, James.
 1889 Morgan, Wm. H.
 1889 Marié, Léon.
 1890 Mallory, S. H., Chariton, Iowa.
 1890 Mackey, Chas. W., Franklin, Pa.
 1890 Montant, Alphonse.
 1890 McCarter, Hon. Thos. N.,
 Newark, N. J.
 1890 Mackay, J. W.
 1891 Mitchell, Grove P.
 1891 Meeks, Edwin B.
 1892 Marshall, Henry Rutgers.
 1892 Miller, Hon. Warner.
 1892 Mills, A. G. (L. F.)
 1893 Moss, H. O., New Berlin, N. Y.
 1874 Newell, John (L. F.), Chicago, Ill.
 1874 Niles, William W.
 1880 Nelson, William.

- 1882 Naylor, Joseph.
1882 Nelson, Richard.
 South Framingham, Mass.
1883 Noble, Charles C. (L. F.)
1884 Neumoegen, B.
1886 Notman, John.
1886 Neftel, W. B., M.D. (L. F.)
1887 Noyes, Wm. C.
1889 Nun, R. J., M.D.,
 Savannah, Ga.
1889 Newton, Daniel H.,
 Holyoke, Mass.
1890 Newton, Gen. John.
1891 Newkirch, Chas.
1891 Newman, Mrs. Angeline E.,
 Omaha, Neb.
1892 Nichols, O. F., Brooklyn.
1893 Nelson, E. B., Rome, N. Y.
1893 North, Edward P., C.E.
- 1874 Ottendorfer, Oswald. (L. F.)
1874 Olyphant, Robert M.
1874 Owen, Frederick N.
1875 Ottiwell, John D.
1875 O'Connor, Thomas H. (L. F.)
1875 Opdyke, William S. (L. F.)
1877 O'Gorman, Hon. Richard.
1879 O'Gorman, Richard, Jr.
1879 O'Brien, Thomas S. (L. F.)
1880 O'Shaughnessy, John W. (L. F.)
1881 Oakley, Henry A.
1882 Osborn, W. H. (L. F.)
1882 Oppenheim, Edward L.
1882 Osgood, William H.
1883 O'Donohue, Jos. J.
1887 Ogden, William B. (L. F.)
1888 Oakes, T. F. (L. F.)
1889 O'Connor, Wm. P.
1889 Orr, Alexander E.
1890 Olcott, Frank Nelson.
1890 O'Dwyer, J., M. D.
1890 Oppenheim, B. Gerson.
1891 Osborne, John H., Auburn, N. Y.
1893 Operti, Albert.
- 1893 Osborn, Prof. Henry S., Oxford, O.
1852 Poor, Henry V. (L. F.)
1857 Pyne, Percy R. (L. F.)
1868 Paulison, John P., Tenafly, N. J.
1871 Peabody, Hon. Chas. A.
1872 Parish, Henry. (L. F.)
1874 Peabody, Arthur J.
1874 Penfold, William Hall.
1874 Potter, Hon. Orlando B.
1874 Pondir, John.
1874 Packer, Elisha A.
1874 Prichard, William M.
1875 Prentice, W. P.
1875 Pfund, Anton.
1875 Porter, Gen. Horace.
1876 Plum, James R.
1878 Parsons, Edwin.
1880 Pinchot, James W.
1880 Powell, Wilson M.
1881 Post, Charles A.
1882 Parsons, Wm. (L. F.)
1882 Parrish, James C. (L. F.)
1882 Pell, Wm. Cruger,
 Highland Falls, N. Y.
1882 Parsons, Joseph H.
1882 Paton, John.
1882 Platt, Thos. C.
1882 Parsons, John E.
1882 Parsons, Charles.
1882 Parsons, Mrs. E. (L. F.)
1883 Parks, Robert H. (L. F.)
1884 Post, George B.
1884 Place, George.
1884 Purdy, John F.
1884 Plush, Dr. Samuel M. (L. F.),
 Philadelphia, Pa.
1885 Post, Wm. Henry. (L. F.)
1885 Planten, J. R. (L. F.),
 Consul for the Netherlands, N. Y.
1886 Phœnix, Phillips. (L. F.)
1886 Pearsall, T. W.
1886 Pryer, Chas., New Rochelle, N. Y.
1886 Parris, Edward L.

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|---|--------------------------------------|
| 1887 Phoenix, Lloyd. (L. F.) | 1883 Quinlin, Leonard G. |
| 1887 Perdicaris, Ion, Tangier, Morocco. | |
| 1887 Parsons, Wm. H. | 1856 Randolph, Anson D. F. |
| 1887 Putney, Daniel. | 1856 Remsen, William. (L. F.) |
| 1887 Peters, Samuel T. | 1856 Riker, John H., Trappe, Md. |
| 1887 Parsell, Henry V. | 1861 Rogers, C. B. (L. F.) |
| 1888 Post, H. A. V. | 1868 Raven, Anton A. (L. F.) |
| 1888 Perry, William A. | 1868 Rose, Cornelius. |
| 1888 Paine, Robert Treat, Boston, Mass. | 1872 Robbins, Chandler. (L. F.) |
| 1888 Phillips, Wm. D. | 1874 Reid, Hon. Whitelaw. |
| 1889 Pickering, Prof. Ed. C., | 1874 Richard, Auguste. (L. F.) |
| Cambridge, Mass. | 1874 Rogers, H. Livingston. |
| 1889 Prince, Fred'k O., Boston, Mass. | 1874 Riker, William J. |
| 1889 Palmer, S. S. | 1874 Reynes, Jaime. (L. F.) |
| 1889 Peabody, John E., Boston, Mass. | 1874 Rhoades, John H. |
| 1889 Peck, Charles E. | 1875 Roosevelt, Clinton. |
| 1889 Putnam, Geo. L. | 1875 Read, Gen. J. Meredith (L. F.), |
| 1889 Pell, Walden. | Paris. |
| 1889 Peabody, Francis H., Boston, Mass. | 1876 Ross, William B. |
| 1889 Palmer, Wm. J. | 1878 Roorbach, Orville A. (L. F.) |
| 1890 Perkins, W. H. | 1878 Rainey, Thomas, M.D. |
| 1890 Plumb, Edward L. (L. F.) | 1880 Robinson, Mrs. John A. (L. F.) |
| 1890 Price, J. Sargent, Philadelphia. | 1881 Robbins, George A. |
| 1890 Potter, Edward Clarkson. | 1881 Rhinelander, Frederick W. |
| 1890 Palmer, Dr. H. R. | 1882 Robbins, S. H. |
| 1890 Peabody, S. Endicott, Boston. | 1882 Rolston, Roswell G. |
| 1890 Poor, Henry W. | 1882 Rhinelander, Charles E. |
| 1891 Powel, De Veaux. | 1882 Rathborne, C. L. |
| 1891 Pinkus, Fred'k S. | 1883 Rosenbaum, Albert S. |
| 1891 Peters, Rev. T. M., D.D. | 1883 Rowland, Thomas F. (L. F.) |
| 1891 Peters, Ed. M. | 1886 Raymond, R. W. (L. F.) |
| 1891 Porter, Henry Kirke (L. F.), | 1886 Roys, Geo. B. |
| Pittsburg, Pa. | 1886 Rice, Isaac L. (L. F.) |
| 1891 Prout, H. G. | 1887 Remsen, Robert Geo. (L. F.) |
| 1891 Pott, James | 1887 Ruggles, James Francis. |
| 1891 Peary, R. E., U. S. N. | 1887 Robb, Hon. J. Hampden. (L. F.) |
| 1891 Potter, Chas. | 1887 Rowell, Geo. P. (L. F.) |
| 1893 Peabody, Col. O. W., Boston. | 1887 Rogers, Archibald. (L. F.) |
| 1893 Pierce, Moses (L. F.), | 1887 Rice, Henry. |
| Norwich, Conn. | 1887 Robertson, T. S., M.D. |
| 1893 Platt, J. D. (L. F.), Dayton, O. | 1888 Russell, Henry E. |
| 1893 Pinchot, Gifford. | 1888 Roe, Alfred. |
| 1893 Playgers, Henry. | 1888 Ropes, Chas. H. |
| 1893 Palmer, Mrs. T. W. | 1888 Rhinelander, Wm. |

- 1888 Renwick, Edward S.
 1888 Richter, Dr. C. M.,
 San Francisco, Cal.
 1888 Russell, Hon. John E.,
 Leicester, Mass.
 1888 Robinson, Wm. M.
 1889 Ropes, John C., Boston, Mass.
 1889 Rice, Prof. J. M.,
 Northborough, Mass.
 1889 Robert, Fred'k.
 1889 Rowe, Wm. H.,
 Salt Lake City, Utah.
 1889 Roelker, Alfred. (L. F.)
 1889 Roberts, Rev. Wm. C., D.D.,
 Lake Forest, Ill.
 1889 Reed, J. Van D. (L. F.)
 1889 Ribon, Juan G., Jersey City, N. J.
 1889 Ryan, Thos. F.
 1890 Roe, Chas. F., U. S. A.
 1890 Raymond, Chas. H.
 1890 Roberts, A. Cookman.
 1890 Roosevelt, Robt. B.
 1891 Rogers, Henry.
 1891 Robbins, Miss Harriet L.
 1891 Raymond, Prof. Geo. L.,
 Princeton, N. J.
 1892 Richards, Benj.
 1892 Ryman, Wm. Penn.,
 Wilkesbarre, Pa.
 1892 Rudkin, Wm. H.
 1893 Rice, Hon. Alex. H., Boston.

 1856 Spofford, Paul N.
 1856 Schermerhorn, Wm. C. (L. F.)
 1856 Sherman, W. Watts.
 1859 Schultz, John H. (L. F.)
 1870 Schafer, Samuel M. (L. F.)
 1870 Schafer, Simon. (L. F.)
 1870 Seligman, Jesse.
 1871 Shaler, Gen. Alexander,
 Ridgefield, N. J.
 1872 Steiger, E.
 1872 Stuyvesant, Rutherford. (L. F.)
 1873 Sturges, Frederick.

 1873 Spencer, James C.
 1873 Scott, Julian (L. F.), Plainfield, N. J.
 1873 Southworth, Alvan S. (L. F.)
 1873 Sturgis, Frank K. (L. F.)
 1874 Steinway, William.
 1874 Sloan, Samuel.
 1874 Schermerhorn, F. Augustus. (L. F.)
 1874 Stuyvesant, Robert R.
 1874 Strong, W. L. (L. F.)
 1874 Steward, D. Jackson.
 1874 Shethar, Samuel.
 1874 Schieffelin, Samuel B.
 1874 Sands, Andrew H.
 1874 Spinney, Joseph S.
 1875 Smith, Lewis Bayard.
 1875 Sturges, Henry C.
 1875 Stewart, Col. Charles Seaforth,
 Cooperstown, N. Y.
 1875 Schultz, Carl H.
 1875 Sandford, Elliott. (L. F.)
 1875 Stranahan, J. S. T.,
 Brooklyn, N. Y.
 1875 Schiff, Jacob H. (L. F.)
 1875 Smith, Augustine.
 1876 Smith, Harsen H.
 1876 Sibley, Hiram W. (L. F.),
 Rochester, N. Y.
 1876 Spaulding, Henry F.
 1876 Stryker, Gen. William S.,
 Trenton, N. J.
 1877 Shearman, William P. (L. F.)
 1877 Schaff, Rev. Philip, D.D.
 1877 Schuyler, Philip.
 1878 Stewart, William Rhinelanders.
 1878 Sands, William R. (L. F.),
 New Hamburg-on-Hudson, N. Y.
 1878 Smith, S. Newton.
 1879 Stevens, Frederick W. (L. F.)
 1879 Smith, E. Reuel. (L. F.)
 1879 Smith, Herbert H.,
 Brooklyn, N. Y.
 1879 Shields, Prof. Chas. W.,
 Princeton, N. J.
 1879 Stetson, Francis Lynde.

- 1880 Southwick, Henry K. (L. F.)
 1882 Sass, Dr. Luis F.
 1882 Schuyler, Spencer D. (L. F.)
 1882 Sayre, Lewis A., M.D. (L. F.)
 1882 Scott, George S.
 1882 Skidmore, Wm. L.
 1882 St. John, W. P.
 1883 Schermerhorn, Charles A.
 1883 Stone, Sumner R.
 1883 Sinclair, John. (L. F.)
 1883 Spence, Lewis H.
 1883 Smith, William Alex.
 1883 Smith, Henry N. (L. F.),
 Trenton, N. J.
 1883 Stern, Louis.
 1883 Sanger, Wm. Cary,
 Sangerfield, N. Y.
 1883 Scott, Rufus L.
 1883 Sorzano, Julio F.
 1883 Spicer, Elihu, Jr. (L. F.)
 1884 Schley, J. Montfort, M.D.
 1884 Shannon, Robert H.
 1884 Stokes, James.
 1885 Storer, Albert.
 1885 Sturgis, Russell.
 1885 Stanton, S. Franklin.
 1885 Schmelzel, Wm. R.
 1886 Sherman, Prof. O. T.,
 Boston, Mass.
 1886 Sherman, George. (L. F.)
 1886 Starr, Egbert.
 1886 Satterlee, F. Le Roy, M.D.
 1886 Sturgis, F. R., M.D.
 1886 Smith, Edwin B.
 1887 Stewart, Lisenard.
 1887 Sutton, Rev. J. Ford, D.D.
 1887 Schell, Robert.
 1887 Swain, George F., Passaic, N. J.
 1887 Sawyer, Lieut. J. Estcourt, U.S.A.
 1887 Seligman, Dewitt J.
 1887 Smith, Jas. Rufus.
 1887 Smith, Nathaniel S.
 1887 Sellow, T. G.
 1887 Satterthwaite, Thos. E., M.D.
 1887 Stetson, George W. (L. F.)
 1887 Sterry, George E.
 1887 Shortall, John G., Chicago, Ill.
 1887 Serrell, Gen. Edw. W.
 1887 Stickney, Austin.
 1887 Stevens, George T., M.D.
 1888 Stephens, Benjamin.
 1888 Stickney, Albert.
 1888 Stuart, Inglis.
 1888 Smith, Nelson.
 1888 Sprague, Henry E.
 1888 Salisbury, Stephen (L. F.),
 Worcester, Mass.
 1888 Smith, A. Cary.
 1888 Stott, Frank H. (L. F.),
 Stottville, N. Y.
 1888 Starbuck, Wm. H.
 1888 Smythe, Rev. Hugh.
 1888 Sheldon, Edwin B.
 1888 Schell, Edward.
 1888 Skiddy, Wm. W., Stamford, Conn
 1888 Sherman, Charles A.
 1888 Schultze, John S. (L. F.)
 1888 Sturgis, Robert.
 1889 Smith, Philip Sherwood,
 Buffalo, N. Y.
 1889 Squibb, E. R., Brooklyn.
 1889 Smith, Prof. Chas. Sprague.
 1889 Smith, Pierre J.
 1889 Steinbrügge, E.
 1889 Sellers, Wm., Philadelphia.
 1889 Spies, Francis. (L. F.)
 1889 SooySmith, Chas.
 1889 Smith, Henry A.
 1889 Sutton, Woodruff.
 1889 Steel, W. G., Portland, Oregon.
 1889 Sackett, Henry W.
 1889 Straus, Isidor.
 1889 Struthers, Joseph.
 1890 Sherman, Gordon E.,
 St. Louis, Mo
 1890 Schenck, N. Pendleton.
 1890 Schwarzmänn, A.
 1890 Sewell, Wm. J., Camden, N. J.

- 1890 Snow, Elbridge G.
1890 Smith, Sir Donald A. (L. F.),
Montreal, Canada.
1890 Simonson, Wm. H.
1890 Schell, Francis.
1890 Schernikow, Ernest.
1890 Smith, Eugene.
1891 Shimmel, Capt. A.
1891 Sidell, Cornelius V.
1891 Stanton, John.
1891 Suckley, Robt. B. (L. F.)
1891 Stieglitz, Edward.
1891 Sanford, David C., New Haven.
1892 Stokes, I. N. Phelps.
1892 Sherman, Byron, Morristown, N. J.
1892 Starr, Theodore B.
1893 Shaw, Chas. A.
1893 Smith, D. Cady, Schenectady.
1893 Sexton, Ed. Bailey. (L. F.)
1893 Sanger, W. H., Rochester.
1893 Smith, Benj. E.
1893 Swayne, Frank B., Toledo, O.
1893 Stevens, C. Albert.

1856 Tiffany, Charles L.
1856 Townsend, Randolph W.
1868 Taylor, Douglas.
1870 Thomson, James.
1872 Tower, Gen. Z. B., U. S. A.
1874 Thompson, David G. (L. F.)
1874 Tiemann, Peter C.
1874 Taylor, Alfred J.
1875 Taintor, Charles M.
1875 Toel, William.
1875 Terbell, Henry S.
1876 Terry, Rev. Roderick. (L. F.)
1877 Tillinghast, Wm. H.
1877 Talcott, James. (L. F.)
1879 Turnbull, Robert J.,
Morristown, N. J.
1880 Tailer, Wm. H.
1882 Thurber, H. K.
1882 Taber, Henry M. (L. F.)
1882 Thomson, Eugene.

1882 Tailer, Edward N. (L. F.)
1882 Terry, John T. (L. F.)
1883 Twombly, Hamilton McK.
1883 Trumbull, Rev. H. Clay, D.D.,
Philadelphia, Pa.
1883 Thalmann, Ernest.
1884 Turner, J. Spencer.
1885 Tone, T. Wolfe.
1885 Tiffany, Rev. C. C., D.D.
1885 Turnure, Lawrence.
1886 Thorne, Jonathan.
1887 Ten Eyck, Sandford R.
1887 Talmadge, Henry.
1887 Thompson, Frederic F. (L. F.)
1888 Thompson, W. Gilman, M.D.
1888 Twombly, Horatio N.
1888 Tresidder, John R.
1888 Taylor, C. Fayette, M.D.
1889 Taylor, Franklin E.
1889 Tuckerman, Joseph, Newport, R. I.
1889 Topping, Henry S.
1889 Tefft, F. Griswold.
1889 Townsend, Alfred M.
1889 Thompson, Rob't M.
1889 Tatham, Chas.
1889 Trask, Chas. H.
1890 Turner, Elisha, Torrington, Conn.
1890 Thorp, John R.
1890 Thorne, Samuel.
1891 Toplitz, L.
1891 Thaw, Benjamin, Pittsburg, Pa.
1891 Thomson, John.
1891 Tobey, Gerard C., Wareham, Mass.
1891 Toop, George H.
1891 Taber, Chas.
1891 Townsend, Jas. B.
1892 Thompson, Alton H.,
Topeka, Kansas.
1893 Townsend, Geo. Alfred,
Washington.
1893 Taylor, Jno. H., Bayside, N. Y.
1893 Truesdell, Warren N.,
Newark, N. J.
1893 Tichenor, Francis M. (L. F.),
Newark, N. J.

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|---|--|
| 1888 Uhl, Edward. (L. F.) | 1875 Work, J. Henry. |
| 1889 Underhill, A. M. | 1875 Winslow, Gen. Edward F. |
| 1891 Ullmann, Ludwig. | 1875 Whitehead, Comdr. Wm., U. S. N. |
| 1891 Ullmann, Emanuel S. | 1875 White, Loomis L. |
| | 1876 Wodemeyer, A. J. D., Liberty, N. Y. |
| 1854 Viele, Gen. Egbert L. | 1877 Ward, W. S., Denver, Colo. |
| 1870 Van Brunt, Hon. Chas. H. (L. F.) | 1877 Woodruff, Col. D., U. S. A. |
| 1875 Van Buren, John D. | 1878 Whitehead, Henry M. (L. F.) |
| 1875 von Post, H. C. (L. F.) | 1878 Whittemore, Charles. |
| 1875 Vanderpoel, A. Ernest. | 1879 Watson, Francis A. (L. F.) |
| 1876 Van Hoesen, Hon. Geo. M. | 1881 Wilson, John. |
| 1876 Van Horn, Cornelius. | 1882 Waddingham, Wilson. (L. F.) |
| 1877 Vanderbilt, Cornelius. (L. F.) | 1882 Williams, David. (L. F.) |
| 1878 Vanderbilt, William K. (L. F.) | 1884 Wheelwright, Wm. D. |
| 1884 Van Siclen, Geo. W. | 1884 Watson, George H. (L. F.) |
| 1885 Valentine, Henry C. | 1884 Wood, Wm. H. S. |
| 1887 Voorhees, Charles H., M. D., | 1886 Wright, Wm. Phillips. |
| New Brunswick, N. J. | 1886 Walsh, Richard M. L. |
| 1887 Van Alen, J. J. (L. F.), | 1886 White, Hon. S. V. (L. F.) |
| Newport, R. I. | 1886 Wiman, Erastus. |
| 1887 Verastegui, Alberto, Havana, Cuba. | 1886 Whitehouse, J. H. |
| 1887 Van Slyck, Geo. W. (L. F.) | 1886 White, Horace. |
| 1887 Voorhees, Philip R. | 1886 Watson, Wm. P. |
| 1888 Villard, Henry. | 1886 Ward, John E. |
| 1888 Ver Planck, Wm. G. | 1887 White, Julian Leroy (L. F.), |
| 1889 Vanderbilt, Geo. W. (L. F.) | Baltimore. |
| 1889 Van Devanter, Willis, | 1887 White, William Aug. |
| Cheyenne, Wyoming. | 1887 White, Alfred T. |
| 1890 Valentine, Ferdinand C., M. D. | 1887 Wilson, J. Wall. |
| 1890 Vose, Geo. H. | 1887 Wheelock, George G., M. D. |
| 1891 Van Winkle, Edgar B. | 1887 White, Andrew J. |
| 1893 Van Antwerp, J. H., Albany. | 1887 White, Henry, London, Eng. |
| | 1887 Whitely, James. |
| 1854 Webb, William H. | 1887 Wilcox, Stephen. |
| 1866 Wendell, Jacob. (L. F.) | 1887 Westcott, Clarence L. |
| 1868 White, Alexander M. | 1887 Welling, W. Brenton. |
| 1870 Wilson, Gen. Jas. Grant. (L. F.) | 1888 West, Hon. George, |
| 1870 Wright, E. Kellogg. | Ballston Spa, N. Y. |
| 1870 Ward, T. W. | 1888 Wynkoop, Francis S. |
| 1872 Wetmore, Wm. Boerum. (L. F.) | 1888 Walsh, F. J. |
| 1873 Wiener, Joseph, M. D. (L. F.) | 1888 Witherbee, Frank S. |
| 1874 Weyman, Charles S. | 1888 Wynkoop, G. H., M. D. |
| 1874 Wheeler, Everett P. | 1888 Woodward, Jas. T. (L. F.) |
| 1874 Wetmore, Hon. George P. (L. F.) | 1888 Worthington, Robt. H. |

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|---|---|
| 1888 Wetmore, Edmund. | 1891 Walker, Jno. Brisben. |
| 1888 Winslow, Daniel. | 1891 White, Miss Georgiana. |
| 1889 Wood, Wallace. | 1891 Waters, Edward Emerson. |
| 1889 Weber, Christian. | 1892 Wilson, J. B. (L. F.) |
| 1889 Warfield, Ethelbert D., Easton, Pa. | 1893 Wills, Chas. T. |
| 1889 Waterbury, John I. | 1893 Warner, Hon. John De Witt. |
| 1890 Williams, Norman (L. F.),
Chicago. | 1874 Young, Mason. |
| 1890 Weir, Chas. G. | 1888 Young, Edward F. C.,
Jersey City, N. J. |
| 1890 Wadsworth, Herbert (L. F.),
Avon, N. Y. | 1891 Young, Frederick S., Troy, N. Y. |
| 1890 Wells, Edward, Jr. | 1891 Young, Edward L. |
| 1891 Wolcott, Henry Roger,
Denver, Colo. | 1875 Zollikoffer, Oscar. |
| 1891 Whitney, Hon. Milton B.,
Westfield, Mass. | 1884 Zabriskie, Andrew C. (L. F.) |

FELLOWS AND MEMBERS DECEASED, 1893.

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|--|--|
| Alexander, Junius B., January 9. | Jennings, O. B., February 12. |
| Allen, Chas. Slover, M.D., October 15. | Kearny, Jos. R., February 20. |
| Auchmuty, Richd. Tylden, July 18. | Lourie, J., February 19. |
| Babcock, Geo. H., December 16. | Low, Abiel A., January 7. |
| Baker, Sir Samuel W., Dec. 30. | Magoun, Geo. C., December 20. |
| Bartholomew, John, March 30. | Moore, C. B., December 10. |
| Bernheimer, Isaac, July 23. | Mufioz, J. M., October 4. |
| Booth, Edwin, June 7. | Peters, Rev. T. M., D.D., August 13. |
| Cheney, Alfred C., July 15. | Rae, John, July 25. |
| Colton, Joseph H., July 19. | Roorbach, Orville A., January 26. |
| Conklin, Edward E., June 5. | Russell, Henry E., January 26. |
| Day, Henry, January 9. | Schaff, Rev. Philip, D.D., October 20. |
| Delano, Franklin H., December 23. | Spaulding, Henry F., July 17. |
| Donnelly, Thomas F., October 11. | Spicer, Elihu, Jr., February 15. |
| Drexel, A. J., June 30. | Spinney, Jos. S., May 3. |
| Eastman, Timothy C., October 11. | Schell, Edward, December 24. |
| Field, B. H., March 17. | Spies, Francis, June 21. |
| Fish, Hon. Hamilton, September 7. | Shimmel, Capt. A., December 17. |
| Fisher, Robt. C., December 26. | Thomson, James, September 13. |
| Hatch, Rufus, February 23. | Weyman, Chas. S., April 13. |
| Hendricks, Joshua, June 3. | Whitehead, Comdr. Wm., U. S. N.,
January 8. |
| Horsford, Prof. E. N., January 1. | Wilcox, Stephen, November 27. |
| Ickelheimer, Isaac, April 27. | |

*List of Foreign and Domestic Scientific Bodies with which this Society
Exchanges Publications.*

ALASKA :

Alaskan Society of Natural History and Ethnology, Sitka.

ARGENTINE REPUBLIC :

Academia Nacional de Ciencias, Córdoba.

Instituto Geográfico Argentino, Buenos-Aires.

Sociedad Geográfica Argentina, Buenos-Aires.

AUSTRALIA :

Philosophical Society of North Queensland, Brisbane.

Royal Geographical Society of Australasia, Queensland Branch, Brisbane.

Royal Society of Queensland, Brisbane, Queensland.

Queensland Museum, Brisbane.

Melbourne Observatory, Melbourne, Victoria.

Royal Society of Victoria, Melbourne, Victoria.

Public Library, Museum, and National Gallery, Melbourne.

Department of Mines, Sydney, N. S. W.

Linnean Society of New South Wales, Sydney, N. S. W.

Royal Society of New South Wales, Sydney, N. S. W.

AUSTRIA :

Ferdinandeum, Innsbruck.

Akademie der Wissenschaften, Krakau.

Gesellschaft der Wissenschaften, Prague.

K. K. Akademie der Wissenschaften, Vienna.

K. K. Geographische Gesellschaft, Vienna.

K. K. Geolog. Reichsanstalt, Vienna.

K. K. Naturhist : Hofmuseum, Vienna.

K. K. Militär-Geographisches Institut, Vienna.

BELGIUM :

Société Belge de Géographie, Antwerp.

Académie Royale de Belgique, Brussels.

Société Royale Belge de Géographie, Brussels.

BRAZIL :

Bibliotheca Nacional, Rio de Janeiro.

Instituto Historico, Geographico, e Ethnographico do Brazil, Rio de Janeiro.

Museu Nacional, Rio de Janeiro.

Observatorio, Rio de Janeiro.

Secção da Sociedade de Geographia de Lisboa no Brazil, Rio de Janeiro.

Sociedade de Geographia, Rio de Janeiro.

Comm: Geog: e Geologica da Prov: de S. Paulo, S. Paulo.

CALIFORNIA:

California Historical Society, Berkeley.

University of California, Berkeley.

Corresponding Societies.

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Historical Society of Southern California, Los Angeles.
Public Library, Los Angeles.
California Academy of Sciences, San Francisco.
Geographical Society of the Pacific, San Francisco.
Mercantile Library Association, San Francisco.
State Mining Bureau, San Francisco.
Geographical Society of California, San Francisco.

CANADA :

Nova Scotian Institute of Science, Halifax.
Hamilton Association, Hamilton, Ontario.
Geological and Natural History Survey of Canada, Ottawa.
Department of the Interior, Topographical Surveys Branch, Ottawa.
Royal Society of Canada, Ottawa.
Geographical Society, Quebec.
Literary and Historical Society, Quebec.
L'Université Laval, Quebec.
Canadian Institute, Toronto.

CHILE :

Der Deutsche Wissenschaftliche Verein, Santiago.
Observatorio Astronómico, Santiago.
Oficina Central de Estadística, Santiago.
Oficina Hidrográfica de Chile, Santiago.

CHINA :

China Branch of the Royal Asiatic Society, Shanghai.
Statistical Department, Inspectorate-General Imp. Maritime Customs,
Shanghai.

COLORADO :

Colorado Scientific Society, Denver.

CONNECTICUT :

Scientific Association, Meriden.
American Oriental Society, New Haven.
Connecticut Academy of Arts and Sciences, New Haven.
Library of Yale University, New Haven.
Ferguson Library, Stamford.

COSTA RICA :

Oficina de Dep. y Canje de Publicaciones, San José.
La Gaceta, Diario Oficial, San José.

DENMARK :

Royal Danish Academy of Sciences, Copenhagen.
Royal Danish Geographical Society, Copenhagen.

DISTRICT OF COLUMBIA :

American Colonization Society, Washington.
Board on Geographic Names, Washington.
Philosophical Society, Washington.

Smithsonian Institution, Washington.
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Topographical Map of European Russia, 143 sheets; General Road Map of European Russia, 17 sheets; Map of Asiatic Russia and Contiguous Countries, 25 sheets; Map of Persia and the adjoining Territories of Asiatic Turkey and Afghanistan, 10 sheets; Map of Asiatic Turkey, Asia Minor, Armenia and Northern Kurdistan, 6 sheets; 8 Plans of St. Petersburg (1700, 1705, 1725, 1738, 1756, 1777, 1799, 1840); Map of the Upper Oxus; Map of Saghalin; Map of Montenegro; Gerard Hessel's *Tabula Russiæ*, 1614; Facsimile of the Tsar Alexis Mikhailovitch's Map of Northern Asia, 1668 (from *Ymer*, 1887); 21 Maps of the White Sea Coasts; 4 Maps of Russian Lapland; 10 Maps of the Arctic Coasts and Islands; 113 Maps of the Baltic Sea, Gulf of Bothnia, Gulf of Finland, the River Neva and the Gulf of Riga; 25 Maps of Lakes Onega, Ladoga and Ilmen; 50 Maps of the Black Sea, the Sea of Azov and the Crimea; 32 Maps of the Caspian Sea and the Sea of Aral; 86 Maps of the Pacific Coasts, the China Sea and the Yellow Sea; 20 Maps of Japan; Map of the World; Map of Grand Duke Alexis Harbour; Atlas of the Mouths of the Sias and Volkhov Rivers; Atlas of the River Svir; Atlas of the River Neva; Atlas of the Terek River.

From Miss Georgiana Schuyler :

Voyage de Néarque des Bouches de l'Indus jusqu'à l'Euphrate, par Wm. Vincent (traduction de J. B. L. J. Billecocq), 3 vols., 8vo, Paris (1800); *Washington and Its Environs*, by De B. Randolph Keim, 12mo, Washington City, 1881; *Itinéraire de l'Italie et de la Sicile*, par A. J. Du Pays, 8vo, Paris, 1855; Appleton's General Guide to the United States and Canada, 12mo, New York, 1881; Appleton's Hand Book of American Travel (Southern), 8vo, New York, 1876; Appleton's Hand Book of American Winter Resorts, 8vo, New York, 1879; *Notes of a Traveller in France, Prussia, Switzerland, Italy, etc.*, by Samuel Laing, 8vo, London, 1842; Cruchley's Picture of London; Cruchley's New Plan

of London and Environs; Cruchley: Railways of England and Scotland; Stanford's Map of the Seat of War (in the Crimea); Artaria & Cie: Praktische Geschäfts- und Reisekarte, u. s. w., Europa: Wien, 1865; Butler's Atlas of Ancient Geography; Bradshaw's Railways of Great Britain; Lieut. Ives's Military Map of Italy, New York, 1859; Paris Nouveau et Ses Environs, s. a.; Arrowsmith's Map of Egypt, 1858; Andrews's Report on Lake Commerce, with Maps; Colton's Pocket Map of Illinois; Hayward's Map of the City of New York, 1842; Map of South Carolina, by H. S. Tanner, Philadelphia, 1830; Fay's Great Outline Atlas of Geography, 1867; Bouchette: Map of Upper and Lower Canada; Voyage de Macartney dans l'Intérieur de la Chine (traduit de l'anglais), 4 vols., 8vo, Paris, An XII; Autenrieth's Map of Isthmus of Panama and Darien, 1851; Tiedemann's Road to Chagres and Panama, 1851; Tiedemann's Plan of the City of Panama, 1850; Sidney and Neff's Map of Westchester County, New York, 1851; The Railway Bridge over the St. Lawrence at Montreal; Illustrations of the Aztecs; Chart of New York Bay, U. S. Coast and Geodetic Survey, Washington, 1845; Bird's Eye View of the Seat of War in Virginia, Maryland, Delaware, etc.; Chart of the West Coast of the United States: Section from San Francisco to San Diego, Section from San Francisco to Umpquah River, Section from Umpquah River to the Boundary: U. S. Coast and Geodetic Survey, Washington, 1853-1855.

From Prof. Gustave Schlegel, Leyden:

Problèmes Géographiques—Les Peuples Etrangers chez les Historiens Chinois, par Gustave Schlegel, professeur de langue et de littérature chinoises à l'Université de Leide: IV-VIII, IX-XII. 8vo, Leide, 1893.

From L. Serrurier, Leyden:

Prof. Schlegel's Zoogenaamde Kritiek van het Japansch-Nederlandsch en Jap.-Eng. Woordenboek, deel III. 8vo, Leiden, 1893.

From M. Edouard Silvercruys, Lille:

Le Portugal, depuis les Carthaginois jusqu' au Règne de Dom Carlos 1^{er}, par Edouard Silvercruys, 8vo, Lille, 1892;

La Géographie dans ses rapports avec la civilisation, 8vo, Lille, 1893.

From the Società Geografica Italiana :

Da Zeila alle Frontiere del Caffa, per Antonio Cecchi, 3 vols., 8vo, Roma, 1885-1887.

From the Society of the Sons of the Revolution :

Year Book of the Society of The Sons of the Revolution, 4to, New York, 1893.

From the Swedish Government :

Maps of the Swedish General Staff: Rostojaure, Naimakka, Sjangeli, Torneträsk, Soppero, Karesuando (six sheets on a scale of 1:200,000); Skara, Norrtelge, Karlsborg, Mariestad, Hjo, Östhammar, Stockholm, Upsala (8 sheets on a scale of 1:100,000); Hypsometrical Map of Southern and Middle Sweden, sheets 1, 2, 3, 4 and 6; 64 Official Documents.

From the Academy of Science, Tacoma, Washington :

Proceedings of the Academy: Is it Mt. Tacoma or Rainier?

From J. P. Thomson, Brisbane, Queensland :

Exploration and Discoveries in British New Guinea, paper by J. P. Thomson: The Geographical Work of J. P. Thomson, pamphlet.

From the Imperial University, Tokyo, Japan :

Calendar of the University for the Year 25-26 Meiji (1892-3).

From Alton H. Thompson, Topeka :

The Origin and Evolution of the Human Face and the Descent of Facial Expression, by Alton H. Thompson.

From George Alfred Townsend :

Mrs. Reynolds and Hamilton, by Geo. Alfred Townsend, 16mo, New York, 1890.

From the Société Royale des Sciences, Upsal, Sweden :

Nova Acta Societatis, Ser. III, Tom. XV, Fasc. I.

From the Academy of Sciences, Vienna :

Publications of the Academy, 8 volumes, and Index.

From the Bureau of American Republics, Washington, D. C. :

Commercial Dictionary of Latin America; Hand Book No. 3;

Special Bulletins: Coffee in America and Coal and Petroleum in Colombia; Bulletins 44-49, 53, 61, 63; Second Annual Report, 1892.

From the U. S. Bureau of Education, Washington, D. C. :

Preliminary Report of the General Agent of Education for Alaska, 1890; Memoranda concerning Education in Alaska; Report on the Introduction of Domestic Reindeer in Alaska, 1893; Education in Alaska, 1889-90; Hand Book of University Extension; Statistics of Public Libraries in the U. S., from the Commissioner's Report, 1884-85; Statistics of Public Libraries in the U. S. and Canada; Commissioner's Report, 1889-90, 2 vols., 3 Parts.

From the U. S. Coast and Geodetic Survey, Washington, D. C. :

Appendix No. 15, Report for 1891, Determinations of Gravity; Bulletin No. 26, Fundamental Standards of Length and Mass; Bulletin No. 27, Results of Observations for the Variations of Latitude at Waikiki, Oahu.

From the Chief of Engineers, War Department, Washington, D.C.:

Report for 1892, Parts 1-4 and Atlas.

From the U. S. Fish Commission, Washington, D. C. :

Report of the Commissioner for 1888-1889; Bulletin, Vol. 10, 1890.

From the U. S. Geological Survey, Washington, D. C.:

Topographical Atlas of the United States, 70 sheets; Monographs 17, 18 and 20; Atlas to accompany the Monograph on the Geology of the Eureka District; Eleventh Annual Report, 1889-90, Parts 1 and 2; Bulletin, Nos. 82-86, 90-96; Mineral Resources of the United States, 1891.

From the U. S. Hydrographic Office, Washington, D. C. :

Pilot Charts of the North Atlantic, Jan.-Dec., 1893, and 2 Supplements; Hydrographic Office Publications: Nos. 34 and 35, Sailing Directions for the English Channel; No. 64, Navigation of Caribbean Sea and Gulf of Mexico, Vol. 2; No. 82, East Coast of South America, from Cape Orange to Cape Virgins; No. 84, West Coast of Mexico and Central America, from the United States to Panama; No. 89, West Coast of South America,

comprising Magellan Strait, Tierra del Fuego and outlying Islands; No. 102, Azores, Madeiras, Salvages, etc.; No. 104, Depths into Harbors and Anchorages on the Atlantic and Gulf Coasts of the United States; List of Lights on the East and West Coasts of North and South America (excepting the United States); List of Lights on the West Coast of Africa, the Mediterranean Sea, etc.; Annual Report of the Hydrographer to the Bureau of Navigation, June 30, 1893; Wreck Chart of the North Atlantic Coast of America; Chart No. 1101, North East Coast of Newfoundland; No. 1345, Shimizu Harbor, Japan; No. 1346, Ports of Mera and Koura, Japan; No. 1347, Tsukumo Harbor, Japan; No. 1348, Tateyama Bay, South Coast of Honshu, Japan; No. 1349, La Guayra, Venezuela; No. 1361, North Bay, Side Saddle Islands, East Coast of China; No. 1350, St. Lawrence River, Cornwall to McKie's Point; No. 1351, St. Lawrence River, McKie's Point to Eastern Entrance of Beauharnois Canal; No. 1352, St. Lawrence River, Eastern Entrance of Beauharnois Canal to Montreal; No. 1353, St. Lawrence River, from Montreal to Cape St. Michel; No. 1354, St. Lawrence River, from Cape St. Michel to Ile St. Ours; No. 1355, St. Lawrence River, from Ile St. Ours to Ile aux Raisins; No. 1356, St. Lawrence River, from Ile aux Raisins to Pointe du Lac, including Lake St. Peter; No. 1357, St. Lawrence River, from Pointe du Lac to Champlain; No. 1358, St. Lawrence River, Champlain to St. Emile; No. 1359, St. Lawrence River, St. Emile to Pointe St. Antoine; No. 1360, St. Lawrence River, Pointe St. Antoine to Quebec; No. 1331, East Coast of Brazil, Itacolumi Reef to Rio de Janeiro; No. 1332, East Coast of Brazil, Rio de Janeiro to Santa Catharina Island; No. 1362, East Coast of Korea, Approaches to Ping-Yang Inlet; No. 1363, Japan, South Coast of Honshu, Eno Ura; No. 1364, North Coast of Brazil, Approaches to Maranhão; No. 1365, Illinois, Lake Michigan, Chicago; No. 1366, West Coast of Central America, Salvador, Acajutla Anchorage; No. 1367, Russia, Komandorski Islands, Nikolski Anchorage (Bering Island); No. 1368, The Hawaiian Islands; No. 1369, Argentine Republic, Patagonia, Santa Cruz River; No. 1370, Japan, West Coast of Honshu, Aburatani Bay and

Approaches; No. 1371, Caribbean Sea, Colombia, Old Providence Island, Catalina Harbor; No. 1262, Tracks for Full-powered Steam Vessels, with distances in Nautical Miles; No. 1333, Coasts of Brazil and Uruguay, Santa Catharina Island to Cape Santa Maria; No. 1372, Colombia, Old Providence Island; No. 1373, The Azores: Corvo and Flores; No. 1375, Brazil, Pará River, Channel to Pará; No. 1376, Japan, Coasts of Honshu and Kyushu, Shimonoseki Strait; No. 1374, Colombia, Serrana Bank; No. 1377, Bahama Islands, New Providence; No. 1378, Colombia, Santa Marta Bay; No. 1300, Coast of Japan, Sado Island to the Gulf of Tokyo, including Tsugar Strait; No. 1305, Coast of China, Mouth of the Yangtze-Kiang River to Formosa Strait; No. 1379, Mexico, Yucatan, Mugeris Harbor; No. 1380, Mexico, Yucatan, Ascension and Espiritu Santo Bays; No. 1382, North East Coast of Puerto Rico, Arecibo Harbor; Chart AX, General Index Chart, showing numbers of the General Charts, etc.; Chart H, China and the East, Index to Coast, Special and Harbor Charts; Chart I, Southern Groups of Pacific Islands, Index to Coast, Special and Harbor Charts; Chart R, Japan, Index to Coast, Special and Harbor Charts; Chart S, Hawaiian Islands, Index to Coast, Special and Harbor Charts; Chart T, Western Groups of Pacific Islands, Index to Coast, Special and Harbor Charts.

From the Department of the Interior, Washington, D. C. :

Report regarding Receipt and Distribution of Public Documents, 1891-2; Compendium of the Eleventh Census, 1890, Part 1, Population; Report on Wealth, Debt and Taxation, Eleventh Census, Part 1, Public Debt; Report on Mineral Industries in the United States, Eleventh Census.

From the Inter-State Commerce Commission, Washington, D. C. :

Preliminary Report on the Income Account of Railways in the United States, June 30, 1893.

From the U. S. Naval Institute, Annapolis, Md. :

Proceedings of the U. S. Naval Institute, 7 numbers.

From the Office of Naval Intelligence and War Records, Navy Department, Washington, D. C. :

Naval Manœuvres in 1892; International Columbian Naval Rendezvous in New York Harbor, 1893.

From the U. S. Naval Observatory, Washington, D. C. :

Report of the Superintendent, June 30, 1893; American Ephemeris and Nautical Almanac for 1896.

From the Smithsonian Institution, Washington, D. C. :

Bibliography of the Athapaskan Languages; Bibliography of the Chinookan Languages; Bibliography of the Salishan Languages; Report of the Bureau of Ethnology, 1885-86, 1886-87; On the Application of Interference Methods to Spectroscopic Measurements; Bibliography of Astronomy for the Year 1887; Bibliography of Chemistry for the Year 1887; Mechanics of the Earth's Atmosphere; U. S. National Museum Bulletin, No. 39, Parts A-G; No. 40, Proceedings, Vol. 14, 1892, Annual Reports to June 30, 1890, and June 30, 1891.

From the Department of State, Washington, D. C. :

Reports of the Consuls of the United States, Nos. 146-156, 158, 159, and Special Consular Reports, 3 numbers; Annexation of the Hawaiian Islands to the United States; List of Books and Pamphlets received at the Library of the Department, Oct.-Dec. 31, 1892, Jan.-Mar. 31, 1893, April 1-June 30, 1893, and July 1-Sept. 30, 1893; Foreign Relations of the United States, 1891, 1892; Melbourne Centennial International Exhibition, 1888; Principal Exports to the United States declared at the Several Consulates; Commercial Relations of the United States, 1891-1892.

From the U. S. Weather Bureau, Washington, D. C. :

Monthly Weather Review, 13 numbers; Certain Climatic Features of the Two Dakotas, by J. P. Finley, 1893.

From F. van Ortro, lieutenant de cavalerie, Brussels :

L'Œuvre Géographique de Mercator, par F. van Ortro, 8vo, Bruxelles, 1893.

From Prof. Dr. Hermann Wagner, Göttingen :

Die dritte Weltkarte Peter Apians v. J. 1530 und die Pseudo-Apianische Weltkarte von 1551. Von Prof. Dr. Hermann Wagner, 8vo, Göttingen, 1892.

From Lieut. Col. C. J. Ward, C. M. G. :

The World's Fair: Jamaica at Chicago, 8vo, New York, 1893.

From A. H. Whitcher, Ottawa, Canada :

Report of Exploratory Survey to Hudson's Bay, by Wm. Ogilvie, D. C. S. ; Report on Peace River and its Tributaries in 1891, by William Ogilvie.

From Justin Winsor, Cambridge, Massachusetts :

The Anticipations of Cartier's Voyages, 1492-1534, paper by Justin Winsor in the Proceedings of the Massachusetts Historical Society.

From Yale University, New Haven, Conn. :

Catalogue of the University, 1892-3, 1893-4; President's Report for the Year ending Dec. 31, 1892.

PART I.

TRANSACTIONS
OF
THE SOCIETY FOR THE YEAR
1893.

TRANSACTIONS OF THE SOCIETY FOR 1893.

Annual Meeting of the American Geographical Society, held at Chickering Hall, Monday, January 9, 1893, at 8.30 o'clock P.M. President DALY in the chair.

On motion, it was voted to dispense with the reading of the minutes of the last meeting.

The following persons were elected Fellows of the Society:

BENJAMIN E. SMITH.	MICHAEL JENKINS.
HON. WM. L. LEARNED.	REVERDY JOHNSON.
E. F. HOLDEN.	EDWARD P. NORTH, C.E.
COL. O. W. PEABODY.	MOSES PIERCE.
E. B. NELSON.	FREDERICK W. HOLLS.
CHAS. T. WILLS.	W. T. ALEXANDER, M.D.
HON. JNO. D. W. WARNER.	THOS. M. KING.
D. CADY SMITH.	H. O. MOSS.
JOHN H. TAYLOR.	GEO. W. HOLLAND.
EDWARD KELLY.	WARNER N. TRUESDELL.
CHAS. A. SHAW.	J. H. VAN ANTWERP.
W. H. SANGER.	J. G. CROSWELL.
ED. BAILEY SEXTON.	GEO. H. DANIELS.
FRANCIS CRAWFORD.	GEO. ALFRED TOWNSEND.
R. B. DODSON.	J. RANDOLPH COOLIDGE.
JOHN A. SLEICHER.	HENRY HITCHCOCK.
GEO. R. SMITH, M.D.	J. D. PLATT.
THEODORE D. HURLBUT.	ALBERT OPERTI.
PROF. CHAS. H. SMITH.	THOS. H. CUMMINGS.

The Annual Report of the Council was then presented and read:

To the American Geographical Society:

The Council respectfully submits the following report for the year 1892:

The number of Fellows on the roll for the year 1892 was 1,391,

lxxiii

against 1,479 at the end of 1891. The number of Fellows admitted during the year was 21.

For a record of moneys received and expended reference is respectfully made to the report of the Treasurer, herewith presented.

The Society's house, No. 11 West Twenty-ninth Street, is now so much too small for the growing needs of our organization that, in the opinion of the Council, the time has come when decided action must be taken towards the erection of an adequate fire-proof building. A committee has been appointed to raise the necessary funds and to select a site; and if any Fellow of the Society is disposed to aid in the undertaking, his assistance will be most thankfully received.

In the character of the ten papers read during the year, the Council finds ample evidence of continued activity and usefulness in our field of labor.

The additions to the library are 4,806, viz.: Books 919, atlases 13, maps and charts 688, pamphlets, including periodicals, 3,186. These additions will be reported in detail in Bulletin No. 4, Part 2, for 1892, but mention may be made of some which possess a peculiar interest, such as a large number of charts of the Indian Ocean, its seas and gulfs, presented by Mr. Alex. J. Cotheal; a collection of maps and views of the Suez and other Isthmus canals and plans of cities, presented by Mr. Nathan Appleton; a manuscript map of the Equatorial regions of the Nile, the donation of Col. A. Macomb Mason; a number of topographical and other maps of Italy and France under Napoleon, presented by Mr. P. T. Barlow; and Santarem's great atlas of maps and charts, illustrating the history of cartography, the gift of Hon. Chas. P. Daly and Mr. Chandler Robbins. The Society has also received from Mrs. W. R. Birdsall the collection of objects from the Cliff Dwellings of New Mexico and Colorado, formed by her late husband, and a full-length portrait of Paul B. Du Chaillu, the gift of the artist, Mrs. Clarisse de Cossé Conger.

Respectfully submitted,

WILLIAM REMSEN,

Chairman of Council.

NEW YORK, Jan'y 9, 1893.

The Treasurer's Report was then read, showing the receipts and expenditures for the year ending Dec. 31, 1892:

Amount in Union Trust Co., January 1, 1892.....	\$1,245 46
Receipts in 1892.....	15,098 70
	\$16,344 16
Expenditures	\$14,445 81
On deposit in Union Trust Co.....	1,898 35
	16,344 16

The Committee, charged with the duty of selecting candidates for the offices to be filled, reported the following names:

For President—Chas. P. Daly, LL.D., term to expire January, 1894.

For Vice-President—Rev. C. C. Tiffany, D.D., term to expire January, 1896.

For Treasurer—Walter R. T. Jones, term to expire January, 1894.

For Domestic Corresponding Secretary—James Mühlenberg Bailey, term to expire January, 1896.

For Councillors—John A. Hadden, Henry Holt, Wm. G. Hamilton, Clarence King, William Remsen, terms to expire January, 1896.

On motion, duly seconded, the candidates were declared elected.

President Daly then delivered his annual address, entitled "An Investigation of the Portraits of Columbus."

Reproductions of the portraits were thrown on the screen.

A vote of thanks to the President for his address was adopted, and, on motion, the Society adjourned.

Meeting of February 13, 1893.

President Daly in the chair.

On motion, it was voted to omit the reading of the minutes of the previous meeting.

The following persons were elected Fellows:

J. H. GRENVILLE GILBERT.	FRANK B. SWAYNE.
GIFFORD PINCHOT.	PROF. HENRY S. OSBORN.
W. A. HARDAWAY, M.D.	MRS. W. R. BIRDSALL.
FRANCIS M. TICHENOR.	HENRY BREVOORT KANE.

The President then introduced to the Society Prof. Albert P. Bingham, who delivered a lecture, entitled "Studies Among the Lakes of New York."

On motion, the Society adjourned. . . .

Special Meeting of February 27.

President Daly in the chair.

The reading of the minutes of the previous meeting was omitted.

The HON. ALEXANDER H. RICE was elected to Fellowship.

The President then introduced Alexis A. Julien, Ph.D., who addressed the Society on "The Misfortunes of an Obelisk."

On motion, the Society adjourned.

Meeting of March 13.

President Daly in the chair.

It was voted to dispense with the reading of the minutes of the last meeting.

The President then introduced to the Society Mr. E. J. Glave, who delivered a lecture on "Life in the Wilds of Central Africa."

On motion, the Society adjourned.

Special Meeting of March 27.

President Daly in the chair.

On motion, it was voted to omit the reading of the minutes of the previous meeting.

The President then introduced to the Society Mrs. Alice D. Le Plongeon, who read a lecture on "Yucatan: the Mayas and their Ruined Structures."

On motion, the Society adjourned.

Meeting of April 10.

Vice-President Tiffany in the chair.

On motion, the reading of the minutes of the last meeting was omitted.

The following persons were elected Fellows:

HENRY PLUYGERS.

EDW'D MORRIS BRIGHAM.

Transactions of the Society for 1893. lxxvii

The Chairman then introduced to the Society Vice-President Egbert L. Viele, who read a paper on the "Geography and Architectural Remains of Mediæval Europe."

On motion, the Society adjourned.

Meeting of November 13.

President Daly in the chair.

The reading of the minutes of the last meeting was omitted.

The following persons were elected Fellows:

ARCHER M. HUNTINGTON.

ALEXIS A. JULIEN.

AMORY LELAND.

MISS ADELE M. FIELDE.

President Daly then introduced to the Society Miss Annie S. Peck, who read a lecture on "Greece and Modern Athens."

On motion, the Society adjourned.

Meeting of December 11.

Vice-President Tiffany in the chair.

On motion, it was voted to dispense with the reading of the minutes of the last meeting.

The following persons were elected Fellows:

MRS. THOMAS W. PALMER.

CHAS. ALBERT STEVENS.

Vice-President Tiffany then introduced to the Society Mr Courtenay De Kalb, who delivered an address on the "Social and Political Development of the South American People."

On motion, the Society adjourned.

BULLETIN

OF THE

American Geographical Society

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(Authors are responsible for the contents of their respective papers.)

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BULLETIN
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AMERICAN GEOGRAPHICAL SOCIETY.

Vol. XXV

1893

No. 1

HAVE WE A PORTRAIT OF COLUMBUS?

ANNUAL ADDRESS, JANUARY 9, 1893.

BY

CHAS. P. DALY, LL.D.

William Roscoe, the eminent author of the *Life of Lorenzo de Medici*, the "Magnificent," and of other valuable biographical works, expresses the opinion that there are no representations which interest so strongly the curiosity of mankind as portraits. That a high degree of pleasure, he says, of which almost every one is susceptible, is experienced in contemplating the looks and countenances of those men who, by their genius, or their virtues, have entitled themselves to the esteem and admiration of future ages.

It appeared to me, therefore, as we have recently celebrated the four hundredth anniversary of the discovery of this Continent by Columbus, that it would be appropriate at such a period to devote the annual address of the president of an American geographical society to the enquiry whether we have any portrait of the great discoverer. It is an enquiry to which I

have given attention for some years. I have seen both here and in Europe very nearly all the pictures claimed to be his portrait. I have read everything, I think, relating to the enquiry that has been published and feel that I am able, at least, to lay before you all that is known upon the subject.

It is a very difficult one, as is the case with so many things respecting Columbus ; for I doubt if any distinguished man ever lived, about whom there is so much that is conflicting, contradictory and perplexing.

Twenty-three places have been claimed to have been his birthplace. He said himself that he was born in the city of Genoa, and Mr. Henry Harrisse, after an exhaustive research, has, I think, established that this was true, and yet there are some who still maintain that he was not born in the city of Genoa, but in some village near it.

The year of his birth is disputed. It has been questioned whether the name by which he is known was the true name of his family. Mr. Harrisse has shown by documentary evidence who was his father and his grandfather, and the humble occupation they followed ; yet a recent writer, Harold Frederick, in the *London Illustrated News*, of October 12, 1892, says that the only credible information is that he was closely related to a notorious and blood-thirsty pirate, the terror of the merchant galleys of Venice, whose real name was unknown, and who, with "a grim piratical pleasantry," called himself "Colombo" or the Dove, a name adopted by his son, who surpassed his father in ferocity, and who called himself Colombo Giovane, or the younger, and that Columbus "seems to have spent most of his

earlier life with "these Corsairs, his cousins, in their piratical fleet; that with them he burned, murdered and pillaged, from the Tunisian coast to the Flemish dunes and ravaged in pious zeal the infidel seaboard." That with Colombo the Younger he bore his part in the great sea fight off Cape St. Vincent in 1485, and that "when the buccaneering Colombi disappear from human records the discoverer turns up, an impoverished marine adventurer, in Lisbon, and enters upon a career of comparative respectability;" in respect to which it may be said that if there is anything certain about his early career, it is that he was in Lisbon and had lived there a married man for several years before the battle referred to was fought.

What has hitherto been received as reliable, his life, by his son Fernando, and which has been the main source of what knowledge we have had of his earlier career, has been subjected to a critical examination by Mr. HARRISSE, who has written a volume to show that it has been extensively tampered with and cannot be relied upon as authentic.

His reception at Barcelona by Ferdinand and Isabella, of which such a glowing account is given in his life by Washington Irving, Aaron Goodrich, in his life of Columbus, pronounces "an exploded popular error," upon the authority of the late Charles Sumner, who in 1844 searched the admirably arranged archives of Aragon and of the city of Barcelona, for some record of such a prominent event and could find nothing respecting it. A diario, or day book, was kept at the time in Barcelona, in which the arrival of ambassadors, the movements of the

king and queen, the public festivities and the trifling incidents, which in our day are found in court journals, were duly recorded, and yet, Mr. Sumner says, "not a word appears in it in regard to Columbus."

And finally the place where his remains now repose is disputed, and during the past five years fourteen works, twelve in Spanish and two in Italian, have been published upon that subject.

The same conflict and uncertainty exist with regard to his portraits. There is no portrait or pictorial representation of his person, that can positively be declared to be authentic; nor is there any evidence upon which it can be asserted as a fact, that he sat for a portrait, and M. F. Feuillet de Conches, who wrote an article on the portraits of Columbus, in 1856, for the *Revue Contemporaine*, asks: Is it presumable that Oviedo, his son Ferdinand, and after them, Benzoni and Herrera, would have entered into such a detail of his personal appearance, if there had then existed a portrait of him, to refer to? and Mr. Harris says that as to the portraits painted, engraved or sculptured, which figure in collections, in public places and in the form of cuts, there is not one that is authentic. It is all pure fancy.*

Notwithstanding this, I believe, that he did sit for a portrait and probably for more than one. It is my belief that we have his true lineaments, and my address this evening will be devoted to showing upon what that belief is founded.

The fact, that up to this time, there is no portrait of Columbus that can be duly authenticated, explains

* Christophe Colomb, Hen. Harr., Tome II., p. 166.

why, during the latter part of the last century and throughout the present one, so many pictures have appeared that have been claimed to be original portraits of him, all of them differing more or less from each other; and what is remarkable is the credulity with which distinguished scholars and writers upon Columbus, and the events connected with him, have accepted some of these as genuine and had them engraved for their works without any evidence in support of them. Any one, in fact, has felt at liberty to believe and to persuade others, that some old portrait he has got possession of is an original portrait of Columbus. Painters, sculptors and engravers have also felt at liberty to offer anything as their conception of his true likeness, the result of which has been to produce the greatest confusion, and to warrant the assertion that no man probably has ever lived of whom there have been so many different representations in portraiture.

Our associate, Mr. Ponce de Leon, who, like myself, has been for many years engaged in this enquiry, and to whom I have been indebted for much information, tells me that he has seen more than 450 different representations of Columbus. I have myself seen a great many, and about a month ago, in looking over my collection, Mr. Ponce de Leon found twelve that he had never seen before.

Another explanation is that up to the present century no investigation was made. In 1823 Spotorno, an Italian writer, devoted a few pages to the subject, but what may be called an investigation was not undertaken until Don Valentin Carderera y Solano, an eminent Spanish painter and archæologist, and author

of that great work on the Art Monuments of Spain, *Iconografía Española*, and other artistic works, alike distinguished for their learning and their accuracy, who knew more of the history of Spanish art than any one before him, published in 1851 a most valuable memoir upon the subject,* which was followed in 1856 by the paper of de Conches, to which I have referred.

When the citizens of Genoa in 1842 contemplated erecting in that city a monument to Columbus, the municipality applied to the Spanish government to ascertain if any portrait of him was known in Spain, or for any information existing there on the subject. The government referred the matter to the Royal Academy of Madrid, and the Academy appointed a committee, of which Carderera was chairman, who in 1851 made a most exhaustive report, which the Academy published, giving everything that was then known either in Spain or elsewhere upon the subject, and laying down what must be the true line of enquiry in any investigation thereafter for further information.

Yet, notwithstanding the elaborate investigation of Carderera, and the concurrence forty years ago of Feuillet de Conches in its result, this confusion still continues, and we had an illustration of it, in the Centennial Celebration in this city last October, in the appearance in shop-windows, upon the public buildings, and in the streets, of a number of different-looking personages as Columbus.

Many anecdotes might be given to illustrate the effect which all this has produced. One which I heard

* Informe sobre los retratos de Cristobal Colon, su traje y escudo de armas por Don Valentin Carderera, Madrid, 1851. 4to.

when I was in Seville in 1881 will suffice. There was in the library, left by Columbus' son, Fernando, to the Cathedral of Seville, a portrait of Columbus. An artist asked what was thought of it, and the custodian replied that it was one of the most reliable portraits; upon which the artist said: "I am glad to hear it, for I painted it from imagination, and exhibited it at the Exposition in Paris, at the close of which it was bought by a Spanish gentleman."

As an aid in this enquiry, we have the description that has come down to us of the personal appearance of Columbus by those who knew him. It is not only very particular, but the five persons from whom it is derived substantially agree with each other. To this test therefore all pictures claimed to be true portraits of him must be subjected, and when it is applied it reduces them to a comparatively small number, and it is those only that I shall seriously consider.

The earliest description of the person of Columbus is found in a work attributed to Angelo Trivigiano, entitled "*Libretto di tutta la navigazione dei Rei de Spagna, Venezia*," 1504 (Account of all the Navigations of the Kings of Spain), in which he is described as a "robust man, of a tall stature, ruddy and with a long face."

The next description of him is given in a collection of voyages entitled "*Mondo Novo e Paesi Nuovamente Ritrovati*" (the New World recently discovered), attributed to Alessandro Zorzi, a cosmographer and cartographer of Venice, which was published in Vicenza in 1507, one year after Columbus' death. It contains a brief description of the great navigator, which

is as follows : "This Christopher Columbus of Genoa was a tall, straight man, of great understanding, and long visage."

The next is by Oviedo, who knew Columbus personally. He was a page of the king, with Columbus' son, Fernando, and was in Barcelona when Columbus came to that city to meet Ferdinand and Isabella upon his return from his first voyage, and Oviedo saw him then.

Ovieda says "he was a man of honest parents and life, of good stature and aspect, rather tall than of middle height and with robust limbs. His eye was lively and the other *features of his face* * were in good proportion ; his hair being red and his face somewhat ruddy and freckled." He says that "he spoke well, was wary and of great intelligence, a good Latin scholar and a most learned cosmographer" ; that "he was gracious, when he wished to be, but wrathful when aroused." †

The next is by Las Casas. This is the most valuable of the several descriptions of him by his contemporaries, because it is the fullest, and by a man who knew him well in the latter part of his life. He says : "As regards his exterior and physique, he was tall, above the medium size ; his face was long and dignified ; his nose aquiline, his eyes bluish, his complexion inclining towards a glowing red. His hair and beard, when he was young, were fair, but very soon turned white with so much fatigue. He was witty and lively, speaking very well, but was eloquent and vainglorious when speaking of himself. He was serious with moderation, friendly to strangers, amiable and pleasant with the people of his

* Harrisse erroneously translates it "other parts of his body."

† Oviedo, Book II., c. 2.

household. With moderate gravity, he was discreet in conversation, and so he could gain easily the love of those who met him. Finally, he represented, with a venerable aspect, a person of great position and authority and worthy of all reverence. He was sober and moderate in his eating, drinking, dressing and shoeing."*

His son Ferdinand's description of his father is this: "The Admiral was a man well-formed and of more than the medium stature; of a long visage and with cheeks a little high, without inclining to fat or lean. He had an aquiline nose and light eyes. He was fair, with a lively color. In his youth he had blond hair, although when he reached thirty years of age it became white."†

There is a description of Columbus by Benzoni, who never saw him. Benzoni went to the New World in 1541, thirty-five years after the death of Columbus, and remained there for fourteen years, and may have received the very particular description he gives from persons there who had known Columbus. I refer to it, not only because it agrees with the previous descriptions, but because it is of interest, as it is the only one that mentions that his mouth was a little large, a feature observable in what are known to be the older portraits. He says, "He was a man of reasonable stature, of sound and vigorous limbs, of good judgment, of lofty mind and of gentlemanly aspect. He had lively eyes, red hair, an aquiline nose and the mouth a little large, and

* Las Casas. *Historia de Las Indias*. Madrid, 1875. Vol. I., p. 43.

† Vita di Cristoforo Colombo descritta da Ferdinando suo Figlio. Capitolo III., p. 12.

above all he was a friend of justice, but wrathful when he was offended." *

Andres Bernaldez, Cura de los Palacios, was an intimate personal friend of Columbus, who was a frequent guest at his house. He gives in his "*Historia de los Reyes Católicos*" (Vol. II., p. 78) the following account of Columbus, upon his return from his second voyage: "The admiral came to Castile in the month of June, 1496, in a dress of the color of a Franciscan friar. It was almost exactly the shape or form of the dress of such a friar, with the cord of St. Francis around his waist, as an act of devotion." I refer to it, because in the earliest representation of his person, positively known, he is clothed in a dress of this kind.

What we get from these descriptions is that he was a straight, well-built man, who was rather above the medium height, that he had a long visage and high cheek bones, but with the lineaments of his face well-proportioned; that his eyes were light and piercing, his nose aquiline, and his complexion fair; that in his youth his hair had been red, but became white when he was thirty; which may be regarded as sufficient to test the authenticity of anything claimed to be a portrait of him.

A knowledge of the character of a man is of some assistance in judging of the genuineness of what is claimed to be his portrait. Many judge of the character of a person by the face, the features or the general expression. Women do so intuitively. But in the case of Columbus there is as much uncertainty about his character as there is in so many things respecting him.

* Benzoni, *La Historia del Mondo Nuovo*, Lib. I., p. 30.

It would naturally be supposed that a biographer, after a full investigation of all that is known respecting a man, would be able to present a carefully considered and reliable statement of his character, but so far from this being the case, the conflict among the biographers of Columbus is not only greater but more extreme than elsewhere.

More than sixty years ago, Washington Irving, in his life of Columbus, gave a carefully drawn sketch of his character, founded upon all that was then known respecting him. It is too long to quote entire, but I will give substantially the material part of it. In him, he says, were singularly combined the poetical and the practical. His mind grasped all kinds of knowledge whether procured by study or observation ; while his daring, but irregular genius, bursting the limits of imperfect science, bore him to conclusions far beyond the intellectual vision of his contemporaries. He discerned the phenomena of the exterior world with wonderful quickness of perception, and the ability of quickly converting facts to principles distinguishes him from the dawn to the close of his sublime enterprise. He aimed at dignity and wealth in the same lofty spirit in which he sought renown. He was devoutly pious, religion mingling with the whole course of his thoughts and actions. He was a man of quick sensibility, liable to great excitement, to sudden and powerful impulses. He was naturally irritable and impetuous ; keenly sensible to injury and injustice, yet the quickness of his temper was counteracted by the benevolence and generosity of his heart. He was free from the feeling of revenge, ready to forget and to forgive, and the magnanimity of his nature shows

forth through all the troubles of his stormy career. While Irving does not justify his enslaving the native population, he considers that he was goaded on by the mercenary impatience of the crown, the sneers of his enemies and the unprofitable result of his enterprises. That it was a blot upon his illustrious name and should be considered as an error of the times in which he lived.*

Prescott has said that "Whatever the defects of Columbus' mental constitution, the finger of the historian will find it difficult to point to a single blemish in his moral character. That whether we contemplate his character in its public or private relations, in all its features it wears the same noble aspect. It was in perfect harmony with the grandeur of his plans, and with results more stupendous than those which Heaven has permitted any other mortal to achieve."

In respect to these passages, the last American biographer of Columbus, Mr. Justin Winsor, the librarian of Harvard College, assumes the responsibility of saying, especially in respect to the observation of Prescott, that it is difficult to point to a more flagrant disregard of truth; that it seems to mark an obdurate purpose to disguise the truth, and that this "is nowhere more patent than in the palliating hero-worship of Washington Irving."

Upon a charge so severe and sweeping as this I feel that it is due to these two distinguished American authors to mention that Humboldt told me in 1851 that there was then no historian in Europe that he would place above Mr. Prescott; and as to Washington Irving's

* *Life of Columbus*, Vol. II., B. iv., c. 5, Putnam's ed. N. Y., 1849.

biography, Navarrete, who was certainly competent to judge, said, after it was published, that in fulness, impartiality and exactness it was superior to any that had preceded it,* and Mr. Harris, who was equally, and in view of what is now known, even more competent, and who is not given to undue praise, says, in a recent publication: † "The work of Washington Irving is more than literary. It is a history, executed with judgment and impartiality, which leaves far behind all descriptions of the discovery of the New World, published before, or since. He studied with care almost all the documents that were known in his time, which testifies to the probity of his researches."

In 1856 Roselly De Lorgues, a French writer, published a biography of Columbus, in which, in his estimate of his character, he transcends anything said by Irving, Prescott, or any other writer. "We see in him," he says, "a man who in virtue was perfect; of entire purity of heart; who in moral grandeur surpasses the most celebrated types of antiquity and who is not inferior to the noblest heroes formed by the Gospel; a man who from the nature of his mind and his religious character, partook more of heaven than of earth," and closes in these words: "To express our deepest conviction, we declare before man who knows it not and before God who knows, Christopher Columbus was a Saint," printing the last sentence in large capitals. ‡

Whilst this French writer raises Columbus to an ele-

* Irving's *Life of Columbus*, Vol. I. Preface, XVII. N. Y.: G. P. Putnam, 1850.

† *Christophe Colomb*, Vol. II., p. 163.

‡ *Histoire de Christophe Colomb* par Roselly de Lorgues. Paris, 1856. Tome II., pp. 443, 465, 472, 476.

vation so high, a subsequent American biographer Aaron Goodrich, sinks him to a depth correspondingly low. He accuses him of cupidity, ingratitude, arrogance, perfidy and treachery. He declares that his prevailing traits were hypocrisy and deceit, with which were combined cowardice and cruelty, and that it was from some such an original that Molière drew his character of Tartuffe; that his tastes were brutal, that no character in history so successfully made a cloak of religion, and that no depravity could be attributed to him that would be too gross for belief; that the love of gain and not science or religion was his motive power; that Gold was his God; and winds up the chapter upon his character in these words: "We look in vain through his life for any trait or action that would endear him to the heart of men, for one deed that may be regarded as the impulse of a great and noble or of a generous heart; we find nothing but low cunning, arrogance, avarice, religious cant, deceit and cruelty." *

Winsor's observation upon this degrading picture of the great discoverer is, that "The critic's temper is too peevish and his opinions are too unreservedly biased to make his results of any value," † and gives his own estimate of Columbus, which is not a laudatory one. He describes him as "a creature of buffeting circumstances," and "a weakling in every element of command;" that while "not destitute of keen observation of nature, this quality was not infrequently prostituted to ignoble purposes;" that he was "a devout Catholic,

* Goodrich's *Life of Columbus*, pp. 86, 131, 321, 350, 355, 358, 364, 370. N. Y., 1874

† Winsor's *Christopher Columbus*, p. 504. Boston and New York, 1872.

according to the Catholicism of his epoch, but that when tried by any test that finds the perennial in holy acts," he does not bear examination ; that there was "no all-loving Deity in his conception," but "his Lord was one in whose name it was convenient to practise enormities ;" that while "he mourned bitterly that his own efforts were ill-requited, he had no pity for the miseries of others ;" that "no man ever evinced less capacity for ruling a colony ;" that "the problems he encountered were those that required an eye to command, with tact to persuade and will to coerce, and he had none of them ;" whereas J. G. Kohl, the celebrated German traveller and scholar, in his "Discovery of America," with substantially the same facts before him, says that whilst "there was something visionary in Columbus' nature, yet when the time for action arrived he was never found wanting in decision and energy" ; and describes him generally, as a man in whose organization were united physical energy and strong ideality ; that he had a glowing imagination, with which were combined, however, acute powers of observation and an earnest desire to gain experience ; tendencies so opposite, that in most men the imagination or the practical will predominates, but in his case the proper balance was maintained. Finally, Mr. Winsor says that, "no man craves more than Columbus to be judged with all the palliations demanded of a difference of his own age and ours," and then impairs the effect of this concession by saying that he considers it his duty at the same time, to judge the paths which he trod by the scale of an eternal nobleness.*

* Winsor's Columbus, pp. 449 to 512.

In this conflict I have asked our associate Fellow, Mr. Ponce de Leon, for his opinion, as he has read nearly everything relating to Columbus, and it is not very favorable. It is this : that he was a type of the Italian of that period, having no regard for the truth, when he thought it his interest to resort to falsehood, and who could play the hypocrite, as he did with Isabella, when he deemed it necessary ; that he was cringing to superiors and overbearing to inferiors, qualities usually combined, and was hated by nearly every one under him. While ambitious of renown, he was avaricious and mean in money matters, wanting everything for himself. He was outwardly devout, but never suffered his religion to interfere with anything he wanted to do ; that he was a man of great energy and of an iron will, but was not cruel, and altogether a better man than most of those that he had to deal with ; that it is to be considered that what he often witnessed, the cruelties that the Inquisition inflicted upon the Moors and the Jews, and the sale of enemies and negroes as slaves, had made him callous to human suffering and indifferent to the rights of his fellow-men. Mr. Ponce de Leon thinks that after he was brought to Spain in chains, his mental faculties became impaired ; that he was thereafter sad, depressed and discontented, his correspondence during this period showing that he was not the man that he had been, and finally that he was not worse than his age, but upon the whole better, which, in respect to that age, he says, is saying a great deal.

But as it is desirable, for the purpose already stated, that we should have, amid this conflict of opinion, the best idea of him that can be obtained, I have selected

what I regard as the broadest, the fairest and as a whole the most complete representation of him I know of, which is the one given by Peschel, the eminent German geographer and anthropologist, abridging it somewhat in the translation

He says: "What made Columbus so great was the stormy impulse of his age to pass beyond the boundary of the Old World, which had become too contracted. It was a restless longing toward the East and a keen desire for its treasures that possessed all seafaring people before the birth of the great Genoese, and Columbus possessed what was essential for such an undertaking—a keen sight for the phenomena of nature and a lofty power of conception, which bound together as in one what was most remote and even most improbable, with surprising intuitions and amazing errors. If the creations of his fancy were as real and as vital to him as his great intuitions, their tenacious growth was so interwoven with all his knowledge, that he never gave way before the learning and intelligence of his age, which held him for a madman; nor wearied, though repelled with scorn, in hawking about from one European court to another his vast design of a western way to the land of spices, and, though he knew it not, to an undiscovered world. Even after his great discovery he looked upon his deed as a miracle, his visions as the breath of a divine inspiration, and himself as the chosen instrument of a high decree.

"Neither sagacity nor mathematics,' he says, 'nor charts profited me anything. It came about only in fulfilment of what Isaiah had said.' During an attack of fever on the coast of Nicaragua he thought that he

heard a messenger from Heaven who comforted him with a promise that all his hardships would be recorded in marble. He brooded over the prophetic chorus in the *Medea* of Seneca, in respect to what would take place beyond the Atlantic—[a prophecy made fifteen hundred years before its fulfilment and one of the most remarkable ever uttered by man,—which, translated from the Latin, may be rendered in these words:

The time will come in far-off years
When the Ocean shall loosen the bonds of Nature,
And a great land appear,
And the seaman discover *new worlds*,
And *Thule* be no more the farthest land.]

“Natures, Peschel says, which are deeply stirred within seldom have the gift of drawing strongly to themselves what moves and acts around them ; men approach them with reluctance, and do not feel their neighborhood to be genial, which explains why Columbus did not win the enthusiastic attachment of the Spanish adventurers who followed him.

“Since we have been able, he says, by means of his written remains to draw nearer to this great man, as a man, we learn with pain that he was wanting in regard for the rights of his fellow beings. He hunted the aborigines with fierce dogs, treated them as property, the prizes of the finders, and distributed them to the holders of plantations, and gold-mines, thereby accomplishing their extinction. When we see, however, in our own day how the rights of the weaker races are shamefully violated, we may have some indulgence for this man of the fifteenth century, though it is bitterly to be regretted that he is not to be counted with the noble spirits of his age, like Isabella and the brave Domini-

cans of Hispaniola, who stood up and contended for the rights of the native population ; nor can we repress a feeling of impatience when this great man on every page of his writings, even in the pathos of religious visions, shows his greed of gain and is haunted by dreams of monopolies and fiscal plans. We sympathize with the man who gave a world to Castile, and died with a bitter feeling that he had served princes who were ungrateful, and who escaped by his death one stroke of fate which would have been harder to bear than the manacles of Bobadilla. It was permitted to him to carry to his grave the glorious illusion " that Cuba was a province of the Chinese Empire, that Hispaniola was the island of Zipangu, and that between the Caribbean Sea and the Bay of Bengal there lay no water-covered hemisphere, but only an isthmus. The discoverer of America died without suspecting that he had found a new continent. He believed the distance between Jamaica and Spain to be but the third part of a circle of latitude, and exclaimed : " The earth is not so large by far as people think." The doubling of the world by a new continent did not lie in his thought, and his great deed would have seemed to him sorely diminished if he had been forced to admit that behind the ocean, over which he had triumphed, there lay yet another vast sea, for then his plan to bring together the western and the eastern civilizations would have been left but half accomplished."

The earliest pictorial representation of the person of Columbus, of which we have any information, was in the gallery of Paolo Giovio, or, to give him his Latin name, by which he is better known, Paulus Jovius, at

Lake Como, in Italy, a wood-cut of which is in the second edition of a work of Jovius, entitled *Elogia Virorum bellica virtute illustrium*, or *Eulogies of Men illustrious for their warlike prowess*, published at Basel in 1576, and as this wood-cut is, as far as we know, the earliest published portrait of Columbus, it will be an appropriate introduction to this branch of our enquiry to give some account of Jovius and his celebrated collection. He was born at Como in 1483 and was consequently a contemporary and a countryman of Columbus, but probably never saw the Admiral. In 1506, when Columbus died, Jovius, who was then in his twenty-third year, was a practising physician in Rome, which profession he gave up for the pursuit of letters, and became distinguished as a writer of biographical and historical works; and having sought advancement in the Church, Adrian VI. made him a canon of the Cathedral of Como. When the Constable de Bourbon sacked Rome, in 1527, Jovius having lost all he possessed, Clement VII., to reimburse him, made him Bishop of Nocera de' Pagani, in the Kingdom of Naples, then under the dominion of the Crown of Spain; and in 1530, when the pope and Charles V., having been reconciled, had an interview at Bologna, Clement took Jovius with him, where it is said he was received by the emperor and the princes and noblemen in his suite with marked distinction. He was a man of learning and of ability, whose productions were widely read throughout Europe, but a venal writer, who from large gifts received from those whom he praised and those who feared the venom of his pen, and by the sale of benefices, amassed a large fortune, with the proceeds of

which he built a villa, or rather a palatial residence, upon a peninsula on Lake Como, upon what he supposed to be the ruins of the villa of Pliny the Younger, though in this, it appears, he was mistaken, and here he brought together a great collection of rare and curious things—antiquities, pictures, statues, and other works of art, medals, gems, novel curiosities, both from the East and the West Indies, and many other objects of interest, which were arranged in seven stately galleries, to which he applied distinctive names, such as the Vestibule of Homer, the Hall of Pliny, the Hall of Minerva, the Apartment of the Sirens, the Hall of the Graces, etc.; and he gave to the whole the general name of the “Abode of the Muses,” from the Greek original of our modern word “Museum.”

A great central feature of this collection was a gallery devoted to the portraits of illustrious men, of which Vasari says he had upward of five hundred, obtained largely by gifts from sovereigns, princes, noblemen, and artists; and among them was a portrait of his countryman Columbus. Italian writers say that he was constantly begging genuine portraits from kings, princes, noblemen and artists, and when he could not attain them by gift, that he employed the very best artists; and that he took great pains to secure those that were genuine. In the preface to his *Elogia*, 1551, he states that the warlike (*bellicosi*) heroes, whose eulogy he pronounces, “may be seen in his gallery set forth in their true likeness, in admirable portraiture.” And in his letters published by Ticozzi and Boteri, he refers to the great care he took in collecting authentic portraits, “never feeling satisfied,” he says, with those

he received, "fearing their incorrectness." As he was not only a Spanish bishop, but a man of great influence with Charles V., who gave him a pension, as well as with the eminent personages of his court, it may fairly be assumed that if a portrait of Columbus then existed in Spain, he, of all other men, was the one most likely to obtain it. Count Giovio says (*Lari Artistici*, Giovanni Giovio, Como, 1881) that it is believed that he got his portrait of Columbus from the navigator's son Diego, which, without something more authentic than this, may be regarded as doubtful, for Diego had been dead for more than ten years, when Jovius in 1537 erected his villa at Como.

It may well be believed that what he says of the great care he took to get only reliable portraits for his gallery was true. Some of the portraits which are printed in the first part of the edition of the *Elogia* of 1576, such as that of Romulus and a few others, were necessarily imaginative; but it may have been otherwise with distinguished men of the fifteenth and sixteenth centuries, whose portraits, unless known to be genuine, would scarcely have been admitted in a gallery that was renowned throughout Europe, and that, with the collection of which it formed a part, was visited by people of all classes and of all countries, from kings and princes downwards.

Tiraboschi says (*Storia della Letteratura Italiana*, Vol. VII., Libro III., p. 897, ed. Firenze, 1810), that the Museum of Jovius was one of the most memorable undertakings which the love of the fine arts and of letters produced in the sixteenth century. He adds:

"The description which he himself and others after

him have made of it, excites astonishment in us that a man in private life could accomplish so much; and he owed a great part of the happy success of his great idea to his very histories themselves; for when it was known that he was writing the events of his time, many, solicitous for their good name, sent him valuable gifts, hoping in this way to render the historian favorable to them."

Its value may be judged by the circumstance that Giulio Romano bequeathed to it his collection of the paintings of Raphael. It was so celebrated that Cosmo First, Grand Duke of Tuscany, had copies of many of the portraits made for his collection in Florence, which are now in the Uffizi gallery. These copies were made by an artist named Cristofano dell' Altissimo.

Altissimo went to Como in 1552, the year that Jovius died, and completed the copies by 1555.* Vasari gives a list of the portraits Altissimo copied. It is not in Bohn's English edition of Vasari, but will be found in the edition of Bologna, 1674 (3d vol App. Sign. Eff.). It contains 253 names, among which is "*Colombo Genovese*" and the portrait of Columbus, now in the Uffizi gallery at Florence, is supposed to be that copy. It appears also that another painter, Bernardino Campi, copied the *same series* at the *same time* as Altissimo for Donna Ippolita Gonzaga,† and if he copied the Columbus there would have been two copies contemporaneously made, by different artists, of the Jovian portrait.

Lanzi‡ says that Altissimo "copied the features of

* Vasari's *Lives of the Painters*, Bohn's Eng. edition, Vol. VI.

† Notes to Vasari by S. P. Richter, Bohn's ed. of Vasari, Vol. 6, 301.

‡ History of Painting in Italy, Bohn's Ed. 1847, Vol. I., p. 197.

the celebrated men, but *attended little to other circumstances*; whence it happens that the Giovia collection, the Medicean one alone, exhibits many very dissimilar manners, but the features of the originals are very faithfully expressed," which Bryan repeats with the remark that these copies have a high degree of finishing without labor. *

Jovius published several works in the form of eulogiums upon the illustrious men in his gallery, one of them being devoted to Columbus, and no one who has written before or since has pronounced a higher eulogium upon him. What is remarkable for the period is the thorough knowledge he possessed of what Columbus had done; the only error being that, as to its results, he confounded one voyage with that of another. In this Elogium, as he called it, which is well written and eloquent, he says who does not wonder that this man, with a most open countenance and the amazing strength of a vast intellect, should have been born in a mean little village near Savona, and closes his eulogium with this passage: "So that Columbus seems to be in every way worthy to be honored with a most fitting statue at Genoa, by those Ligurians who to-day regard things of the present time rather than those of a former period;" and how truly he judged them appears in the fact that it took them just three hundred years to act upon this suggestion.

It should, however, be stated that if what is said of Jovius by certain writers is correct, he is not free from the suspicion of being a man capable of palming

* Bryan's Dictionary.

off the portrait of another in his gallery as that of Columbus, if it could be done without fear of detection.

It is said that Adrian VI. made him a canon upon the condition that he would say something honorable about him in his historical works. Whether this was true or not, what he did say, and that not in a history, or a biography, but where it would scarcely be looked for, in a work upon Natural History, was that "he was without talent, ability, or mind, and, in a word, almost stupid." * It is also said that he frankly declared that he had two pens, one of gold and one of iron, and that he used either, as the occasion served.

Bodin, while commending the elegance of his writings, says that he prostituted his pen in writing history and got more by telling lies than other men by relating the truth; that when asked why he told so many, he replied that he did it to oblige his friends; that he knew the age would not give any credit to his history, but that posterity would not doubt what he said. Vossius states that he promised an ancient genealogy to all scoundrels who paid him well, traduced others who would not, and had the fate of all liars, as he was not believed when he spoke the truth. Brantome calls him a great liar, Scaliger says the same, and Maresius speaks of him with the utmost contempt. But Bayle says that he can hardly believe that he confessed all that is related of him, as he boldly declared that he printed his book in the lifetime of those concerned, as he did not fear to be convicted of falsehood, and he has been defended by Oudin, Boccacini, Marcel and

* *Biographie Universelle*, Paris, 1816, tom. 17, p. 434, etc.

other writers; the truth probably being that he was not as bad as he was painted.

It is not probable, however, that he palmed off another portrait for that of Columbus. He could not have done so safely in a gallery so much visited, for there were men then living who had known Columbus, and Carderera says that at that highly-cultivated period of the sixteenth century it would not have been possible to put up a portrait of another in a public gallery as that of Columbus without detection.

This historian, biographer, and great collector died in Florence in 1552, and the reader of his epitaph in the church of San Lorenzo, in that city, was informed, in a Latin couplet, that he was the glory of the Latin tongue, and superior either to Sallust or Livy, a judgment which posterity has not confirmed.*

The fate of his gallery may be briefly told. When Clement VII. gave him a better benefice at Como than he had had before, he also lodged him in an apartment in the Vatican, which he occupied until 1549. But Paul III., Clement's successor in the papacy, having refused to appoint him Bishop of Como, when that see became vacant, he left Rome and passed the remaining three years of his life at his villa in Como, or in visiting different courts in Italy, dying, as has been said, in Florence in 1552 of an attack of the gout. His villa was broken up by the military operations in Italy toward the close of the sixteenth century. The villa itself was destroyed by the rising of the water of Lake Como, and when Boldoni saw it in 1617 it was a ruin. The collection of the portraits of illustrious men, however,

* Nicéron, *Memoires*, etc., Tome 25, pp. 360, 361.

was kept together, as a whole, until 1587, when they were divided between two families of Jovius' descendants, the head of one family taking the men of warlike prowess, and the head of the other the learned men.

After this it underwent several subdivisions, which in the end resulted in the dispersion of the whole collection.* Where the portrait of Columbus went was not known, but in 1880 a search was made, in that part of the collection which had descended to Count Giovio, at the suggestion of Mr. J. S. Jorin, a gentleman of Havana, who has for many years been engaged in investigations relating to Columbus, and a portrait was found with the abbreviated inscription over it of *Columbus, Lygur, Novi Orbis Reptor* (Columbus, Ligurian, Discoverer of the New World), Liguria being the territory in which Genoa is situated. This picture is now in the possession of Dr. d'Orchi, of Como, from whom it gets its present name, and I shall hereafter refer to it.

I will now, with the aid of the stereopticon, show you the portraits, beginning with those that alone, in my judgment, are entitled to consideration, and which in the order of time, as far as we know, are the oldest; and will then show you the more prominent of those that have been believed in, with little or nothing to support the claim made for them.

This is a photograph of the Jovian wood-cut from a copy of the edition of the *Elogia* of 1576 that is in my possession.

Carderera says of it, what will be equally obvious to you upon looking at it, that the proportion and gen-

* *Lari Artistici*, Giovanni Giovio. Como, 1881. Printed for private circulation. Lanzi's *History of Painting in Italy*. Vol. I., p. 197. Bohn ed.

eral form of the head, the long face and the curvature of the nose conform to the description of Columbus



THE JOVIAN COLUMBUS.

by his contemporaries, but that beyond this all is vague and uncertain ; that the right eyebrow is a perfect arch, while the left is rather straight ; that the upper lip is very confused, as well as the muscles of the face, which

are scarcely defined, because, he remarks, the art of engraving on wood did not then in such a sympathetic face admit of more perfect details. The wood-cut, he observes, is so rough and worn that it is impossible to judge with exactitude; that it would not be a sufficient guide for an artist to reproduce the physiognomy of Columbus, owing to the roughness and indistinctness of the engraving, and because it does not sufficiently define some important features. He and Señor Angel de los Rios, a distinguished member of the Madrid Academy, and an eminent literary man in Spain, agree that this wood-cut must be the standard in this enquiry, as it is the most ancient testimony that a portrait of Columbus had been painted, and because he is represented in the frock of a Franciscan monk, which was the kind of dress worn by Columbus when the curate Bernaldez saw him in Castile, upon his return from his second voyage. Señor de los Rios, moreover, has shown that this was the kind of dress then worn by sailors in Spain as a protection against the weather, and which, he says, is still worn by Spanish sailors and by farmers in the Basque provinces.* Carderera compared this wood-cut with a sketch of the picture in the Uffizi gallery, which he had made for him by a distinguished artist in Florence and he was satisfied of the identity of the two heads.

I will now show the picture in the Uffizi from a photograph of it.

You will see that it agrees with the wood-cut in the manner in which the hair is worn, in the shape of the forehead, in the high-arched eye-brows and the fixed

* Boletín de la Real Academia de la Historia, Tomo I., Cuaderno III. Feb. 1879.

look out of the eye, so far as these features are indicated in the wood-cut ; in the aquiline nose and the long face, which looks, however, fuller. I have seen this portrait twice during the past forty years, and if I may rely on my recollection, it represents a man of



THE ALTISSIMO PORTRAIT.

forty or a little over, with dark hair. We do not positively know the year of Columbus's birth, and his age at any particular period has, therefore, been a matter of conjecture ; though as appears from a document recently discovered at Genoa it may be fixed within a range of five years. In respect to his hair, his son Fer-

dinand says that it turned white when he was thirty, whilst Oviedo, who saw him at Barcelona after his return from his first voyage, says that his hair was red, and he was then, according to the recently-discovered document, at least forty years of age, so that upon these two points there is the same uncertainty as in other matters respecting him. In pointing out that the face is more round and full in this picture than in the Jovian wood-cut, and that the hair is neither red, nor gray, but dark, you will remember what I quoted from Lanzi, that whilst Altissimo copied the features, he attended *little to other* circumstances, and I have read in another writer, whose name I cannot recall, that in making these copies he painted them so as to conform to the then prevailing taste of the Renaissance, and in doing so he may have taken many liberties.

In the general effect the two pictures do not look alike, in respect to which I may quote the remark of Carderera, that variations born of the school and mannerism of each artist are no obstacle to a good resemblance; of which I will now show you a striking illustration in two copies of this very portrait in the Uffizi Gallery.

When Thomas Jefferson was minister to France in 1784 he was desirous of obtaining a copy of a portrait of Columbus to bring to this country, and being told by the best-informed persons that the one in the Uffizi was considered a genuine portrait, he had a copy made of it, which is now in the possession of the Massachusetts Historical Society; and when Gouverneur Morris afterwards went as minister to France he also had a copy made of the one in the Uffizi, which after his death

his widow presented to the New York Historical Society where it now is. I will show you these copies together, and without a careful examination you would scarcely suppose that both are copies from the same picture.

You will observe that this picture in the Uffizi has not the Franciscan garment that is in the wood cut. It may be that the copyist, Altissimo, thought it unfit in the portrait of a distinguished man, or it may be that the engraver of the wood-cut, who, it appears, like Altissimo, was not a faithful copyist, may have heard, for the fact was then known, that Columbus had worn such a habit, and thought it appropriate in the wood-cut to clothe him in what was in his times the dress alike of a sailor and of an ecclesiastic.

The wood-cuts in the *Elogia* of 1576 were engraved by Thomas Stimmer. Ginguené, a French writer, in an article in the *Biographie Universelle* in 1816, says that the portraits engraved in this book "were not copied with fidelity from those that ornamented the gallery of Jovius." He does not say upon what this statement was founded; but a century ago, he may possibly have seen portraits that were known to have been in the Jovian gallery. He was a very learned man and the author, among other works, of a voluminous history of Italian Literature. He was noted for his high integrity and his accuracy, and it may be fairly assumed that a scholar of this nature would not have made such a positive statement as this, unless he had found evidence to warrant it.*

* Thomas Stimmer was a Swiss who, between the years 1570 and 1590, practised his art in Basel and at Strasburg. The art of wood engraving at that



THE ALTISSIMO PORTRAIT

(as copied for Gouverneur Morris).



THE ALTISSIMO PORTRAIT

(as copied for Thomas Jefferson).

Some years ago I met with a photograph of Columbus which greatly impressed me. I then knew nothing of the source from which it was derived; but in going over the Naval Museum of Madrid in 1881 I saw the picture from which it was taken. I made inquiries respecting this portrait, and a few days after-

period, the last quarter of the sixteenth century, was in a low state (Linton's *Masters of Wood Engraving*, p. 120), and Stimmer was among the best of those that followed it. He was, what was unusual at the time, a designer, as well as an engraver and was employed for some years by Peter Perna, the publisher at Basel, in illustrating popular works. Papillon says that he had taste and a marvellous facility in composition (*Traité de la Gravure en Bois*, tom. I., pp. 258, 259), qualities which would not necessarily warrant the assurance that he was a faithful copyist of 130 portraits of the Jovian gallery, but the kind of artist who might be tempted to take liberties. Ginguéné is not the only writer that refers to the want of fidelity in these wood-cuts. Nicéron, in his history of illustrious literary men (*Mémoires pour servir à l'histoire des hommes illustres dans la république des lettres*, Paris, 43 Vols., 1724-1741, 847. H. L.), goes even farther than Ginguéné, for after stating that this *Elogia* of Jovius is one of the most interesting and useful of his works, says that it is sometimes found with portraits which are for the most part fanciful. Peter Perna in his edition of this *Elogia*, in 1575, states upon the title page that it is "now adorned with portraits, expressed to the life" from Jovius' gallery, and in his preface to another work of Jovius, *Elogia Virorum Literis Illustrium*, published by Perna two years afterwards, which has likewise wood-cuts of the personages whose eulogiums are given, he says that the wood-cuts with which it is illustrated are "set forth with the greatest fidelity to the prototypes newly brought forth from that suburban Como, at no less expense than they were taken to it"; which may be nothing more than a publisher's advertisement.

Mr. Harris, in a recent publication (*Christopher Columbus and the Bank of St. George*, New York, 1888), says that the oldest effigy of Columbus is a rough wood-cut in Jovius' "*Illustrium Virorum Vitæ*" printed in Florence in 1549. I have not seen the edition of the *Vitæ*, as it is called, of that year, but the edition of the work two years afterwards by the same publisher, the Duke's printer, L. Torrentini, contains no eulogy on Columbus, nor any wood-cuts. In the same year, in the same city, the same printer published, the Jovian *Elogia Virorum Bellica Virtute Illustrium* (Men illustrious for their warlike prowess) which contains the eulogy on Columbus, but has no wood-cuts, nor engraving of any kind, except the publisher's imprint on the title page. Jovius was the author of at least four different works which were either biographies or what he called eulogies upon the illustrious persons in his gallery. 1. *Elogia Virorum Illustrium*, Venice, 1546; 2. *Illustrium Virorum Vitæ*, Florence, 1549, 1551, Basel,

wards the head of the Museum politely addressed me a note, to the effect that neither he nor his predecessor had ever been able to learn anything respecting its history. I have since learned, from what is said of it by Carderera and from other sources, that the Minister of Marine, many years ago, ordered a portrait to be painted

1577; 3. *Elogia Virorum Bellica Virtute Illustrum*, Florence, 1551; Basel, 1575; 4. *Elogia Virorum Literis Illustrum*, Basel, 1577, and there are other titles: *Elogia veris clarorum virorum imaginibus apposita quæ in Museo Ioviano Comi spectantur* . . . addita Adriani Pont. Vita, Venitiis, 1546, fol.; and *Elogia Doctorum Virorum ab avorum memoria publicatis ingenii monumentis illustrium*, Venice, 1546; Antwerp, 1557; Basil, 1571, in respect to all of which there is some confusion among biographers and authors, as Jovius made additions and changes in these works, an elogium that had appeared in an earlier work being sometimes transferred to a later one as more appropriate, so that these different works are sometimes confounded with each other.

If the edition of the work known as the *Vitæ (Illustrum Virorum Vitæ*, Florence, 1549) contained this wood-cut of Columbus, as Mr. Harris states, it is noticeable that no eulogy upon Columbus nor wood-cut of him is in the second edition of that work printed by the same publisher in the same place two years afterwards, and that the *Elogia Virorum Bellica*, etc., printed by him the same year, 1551, has the eulogy on Columbus, but no cut of him; which I state, having examined both editions.

So far as I have been able to ascertain, the wood-cuts, of which that of Columbus was one, first appeared in Peter Perna's edition of the *Elogia Virorum Bellica*, etc., in 1575, the title page of which indicates, by the words "and *now* adorned with portraits," etc., that the work was then, for the first time, illustrated by these wood-cuts. In a subsequent edition of the work some years afterwards, Perna, in a preface in which he dedicates this edition to Francis de' Medici, after mentioning that the work was "formerly dedicated to Cosmus, that great prince, by the greatest historian of our age," commends the edition to Francis, "as now illustrated by true images from the life, gathered, increased and ornamented with great care, equal art and no less expense," which I interpret as meaning that it was he, Perna, who had illustrated the work by these wood-cuts. There is another circumstance which confirms my impression that they first appeared in this edition of Basel of 1575. The engraver Stimmer surrounded each of the portraits with an elaborate border or frame, embracing figures and other ornamental designs. In the copy that I have of this edition, which contains 130 wood-cuts, ten frames are printed with the space for the portraits left blank, indicating that when this copy went to the press, the figures to fill these blank spaces had not then been engraved.

of Columbus for his department, and that the artist employed painted it from an engraving of Columbus by Capriolo, an Italian engraver, in a work called *Ritratti di Cento Capitani Illustri* (portraits of a hundred illustrious captains), which Capriolo published in Rome in



COLUMBUS.

(*Marine Museum, Madrid.*)

1596, twenty years after the publication of the Jovian wood-cut, and which, judging from the descriptions of Columbus' personal appearance that have come down to us and what we may accept as to his character, is to my mind the most satisfactory representation of him which exists. It greatly impressed Carderera, who thinks it was engraved from another portrait than the

one in the Jovian Gallery, which was painted from the life, after the great discoverer's final return from his fourth voyage, when he was sad and down-hearted, through the ingratitude of the king and his courtiers, but had an admirer in an artist who would have found.



THE CAPRIOLO ENGRAVING.

a pleasure in making a portrait of so great a man, either in painting or sketching him.

The learned Baron Vernazza has said that it is not known that there was before 1506, the year in which Columbus died, any painter or sculptor living in Spain, except Antonio del Rincon, the court painter of Ferdinand and Isabella. It is an unsafe thing for any writer

to make such a positive statement as this, for I find that there were in Spain, during Columbus' time, fifteen painters, all men of ability,* that several of them were portrait-painters, and that between 1492 and 1506 there were three painters in Seville, where Columbus lived during most of the time that he was in Spain, Juan Sanchez de Castro, Juan Nuñez, his pupil, and Gonzalo Diaz.

It is true that the painting of portraits of individuals was not then as general in Spain as in Italy or the Netherlands. Painters there were mostly employed in executing works for churches, or convents, or otherwise decorating religious edifices. They painted religious subjects such as saints, apostles, or scenes from the Saviour's life, generally representing single figures or groups of persons, of whom there being no portraits, they were painted from living models; so that these artists may be said to have been constantly employed in the art of portraiture, and any one of them could have painted a good portrait.

The more I have examined the Capriolo engraving, the more I have been convinced that we have in it the true likeness of Columbus at a late period of his life and such as no artist of that period would be likely to have created. The face is somewhat broader than in the portraits previously referred to; but this is a peculiarity of Capriolo's engravings. In all other respects Carderera and De los Rios recognized that the features

* Juan Sanchez de Castro, Pedro Sanchez, Juan Nuñez, Gonzalo Diaz, Nicolas Francisco Pisan, Jorge Ingles, Frutos Flores, Juan Flamenco, Francisco de Amberes, Juan de Flandes, Juan de Borgofia, Antonio del Rincon, Alvar Perez de Velloldos, Garcia del Barcia, Juan Rodriguez, and some others.

are the same as the one in the Uffizi. The stereopticon view of it that I have shown is from a copy of the work in my possession, now a rare book, which, after a search of many years, I succeeded in obtaining.

The argument of de Conches that if there had been a portrait to refer to, Oviedo, Fernando, and after them Benzoni and Herrera, would not have given such details of Columbus' personal appearance, is not conclusive. The utmost that can be inferred from this is that they probably did not know of any portrait. It does not prove that one had never been painted. Oviedo saw him upon his return from his first voyage, Las Casas knew him only in the latter part of his life, and Ferdinand was a youth of eighteen when his father died, and it does not follow if a likeness of him had been taken, that Oviedo, Fernando, or Benzoni and Herrera, or any one of them, would necessarily have known it.

In the engraving, Columbus is dressed in a close-fitting habit, as in the Uffizi picture, over which a mantle is classically draped. This the artist employed by the Minister of Marine did not follow; but substituted for it the dress in the Yañez picture, to be hereafter referred to, as that picture was in 1763, and painting the portrait in colors he gave the eyes, the hair, and the complexion as described by Columbus' contemporaries. It appears to have been removed from the Department of Marine to where it now is in the Naval Museum. I had a copy of it made while I was in Madrid for our Society, and it may be seen in our principal room. A recent German writer, who it would seem was not aware of the engraving of 1596, from which it was taken, thinks

that it, and the recently discovered portrait under the Yañez, are, when we carefully examine the description of Columbus by his contemporaries, the most like him.*

Domenico Colombo, lord of the castle of Cuccaro, in Piedmont, claimed to be a relative of Columbus and a representative of that family who brought a suit before the Council of the Indies to inherit, when the male



THE CANCELLIERI ENGRAVING.

line of Columbus became extinct, and set forth, among other things, that his family had in their possession a genuine portrait of Columbus, which Harrisson thinks is entitled to consideration.

A fine engraving of this picture was published by Napione in 1808, in his work on the birthplace of Columbus, and another was published by Cancellieri, the writer of a work on the navigator, from which this portrait gets its name. Carderera, whilst recognizing its

* *Allgemeine Geschichte von Wilhelm Oncken, Berlin, 1882, pp. 232 to 240.*

general resemblance to the preceding portraits, points out a slight variation in the hair and in the eyebrows.

A few miles north of Genoa, close to the sea, on the Corniche road, is Cogoletto, which for more than a century enjoyed the distinction of being the birthplace of Columbus. It is a small village of a single street, upon one of the houses of which one Antonio Colombo in 1650 placed an inscription to the effect that Columbus was born in that house. I was at Cogoletto in 1881, and making some general inquiry of the person who occupied the house respecting Columbus, he took me to another house in the same street, and ascending to the second story brought me into a room where the village archives were kept. A venerable old gentleman, the apparent custodian of the archives, was seated at a table, and, when informed that I was making enquiries respecting Columbus, he turned in his chair and drawing back a green curtain exhibited what is known as the Cogoletto portrait. Isnardi, who wrote a book on the birthplace of Columbus, states that the history of this picture has been traced for more than three hundred years, a statement with which the picture certainly, at least in its appearance, agrees, for it is old and very much worn. The late Admiral Baldwin, who was then a member of our Council and at the time in command of the United States squadron in the Mediterranean, had, at my request, a photograph taken of it, of the size of the original, for our Society, which now hangs upon our walls. The portrait appears to me to have been the work of a not over-skilful artist.*

* The photographic copy of the Cogoletto picture in the Society's possession was found to be too indistinct to reproduce in a satisfactory wood cut.

It has a hard, somewhat heavy and solemn look, but has the same features as the previous portraits, with the same depression in the chin that is seen in the Altissimo, the Capriolo and in the other earlier portraits, but much more marked. It has the same dress as in the Altissimo,



THE BELVEDERE COLUMBUS.

and it will be noticed that the mouth "is a little large," as mentioned in the description of Benzoni. It has the inscription above the head: *Christophorus Columbus Novi Orbis Reptor* (Christopher Columbus, Discoverer of the New World).

Among those who had copies made in the sixteenth century from the Jovian gallery was Ferdinand, Arch-

duke of Austria, who, in 1579, sent artists to Como to have copies of these celebrated portraits for his castle in Innsbruck, and the portrait of Columbus now in the Belvedere at Vienna is supposed to be one of these copies. This is from an engraving of it in my possession, and its resemblance, in its general features, to the portrait in the Uffizi gallery at Florence, by Altissimo, will be recognized.

This is from a book of engravings by Crispin de Pass, published in 1598, twenty-two years after the Jovian wood-cut and two years after the Capriolo engraving. It has the long face, the aquiline nose, the high-arched eyebrows, and the same dress as the wood-cut, with a gold chain, as Columbus was known to have worn one, and with a nautical instrument in his hand. Carderera points out that the shape of the nose has been altered by the engraver, and he appears to have made a few other unimportant changes.*

In 1763 a Mr. Yañez brought from Granada to Madrid four portraits, all of the same size and general appearance, which were purchased by the Spanish Government; one of which was a portrait of Columbus. It had a light cloak crossing the breast, and in the dress and features was different from any portrait previously known. About twelve years ago it was subjected to a critical examination, when it appeared to have been re-touched, and upon rubbing the paint in one corner the letter C was found, which led to a removal of the outer covering, when a much finer portrait was discovered beneath, corresponding in all respects with the descrip-

* The description given in the text is thought to be sufficient without a wood cut.

tion of Columbus by his contemporaries, and having the inscription on the top: *Columbus Lygir Novi Orbis Reptor* (Columbus, Ligurian, Discoverer of the New World).



THE YAÑEZ PORTRAIT.

Experts recognize from the canvas and other indications that it was painted in Italy about the middle of the sixteenth century, and was probably brought to Spain about that period, when a love of pictures and of all objects of art was awakened in the Spanish noblemen who returned from Italy. I saw this recovered portrait in Madrid in 1881, and Gen. Fairchild, who

was then our minister in Spain, had a copy of it made, which is now in the Wisconsin Historical Society, and is the one from which the photograph shown was taken.

This is the portrait in the Royal Library at Madrid,



THE RINCON PORTRAIT.

which has been attributed to Antonio del Rincon. It is not found in the catalogue of his works that have come down to us, and nothing is known of its history beyond the fact that it was in existence in the early part of the seventeenth century. It is a very fine portrait, full of life and expression, and may well have been the work of the master to whom it is attributed. It represents a

younger man than the one in the Uffizi, and its correspondence with the features in that portrait will be readily recognized.

This is the d'Orchi portrait to which I have referred, and the last of those which I think entitled to



THE D'ORCHI PORTRAIT.

consideration. Mr. Jorin, of Havana, the gentleman at whose request, as I have said, the search was made that resulted in finding it, says that it was too old and worn to have a satisfactory photograph made from it, and that Count Giovio had a copy of it, in water colors, carefully made by a French artist, from which the photograph now shown may have been made, which I have taken from a French illustrated paper.

Mr. Jorin gave, in 1887 in a newspaper in Havana, a very full account of his relations with Count Giovio in the finding of this picture. He thinks it has been repaired and retouched, a long time ago. It has the long visage, the large arched eyebrows, the kind of forehead, the aquiline nose, the depression in the chin and the same distribution of the hair and the same dress as in the Uffizi picture, and from the circumstances under which it was found, it may possibly be the portrait that was in the Jovian gallery. It is a strong and satisfactory picture, and looks like one that may have been painted from life.

My address has extended to such length as not to admit of any thing beyond some general observations upon these nine portraits, which embrace the earliest known. I can only say that they all, to me, represent the same man. You have seen them, however, and can form your own judgment. They differ from each other in the expression and in their general effect, and so do the original portraits of Washington by Peale, Sharpless, Robertson, Stuart and others. It is certainly remarkable that they all have the same features, or characteristics, the peculiar curved depression in the chin, which no artist is likely to have invented; the large expansive bony orbit of the eyes, the aquiline nose, the recognizable length of the visage and the ample chest, denoting the "well formed man" of "robust limbs" as Columbus is stated to have been by Oviedo and his son Ferdinand, which convince me that one or more of them are actual portraits, or that they all have been painted from a common type. The Rincon is that of a younger looking man than the d'Orchi, while the

d'Orchi is a face not as old as the one in the Capriolo engraving. The face of a person differs at different periods of life, and the change is often so great that the man at one stage of life differs very much from the same man at another. If the Spanish experts are right in their supposition that the recovered Yañez, as well as the three pictures that were purchased with it by the Spanish Government in 1763, were, from the indications upon which they rely, all painted about the middle of the sixteenth century, then the Yañez may have been painted from the one that was in the Jovian gallery, which was then in existence, and that there was a portrait of Columbus there, I think after what has been stated, admits of no doubt. I regard the Capriolo engraving, the Yañez, and the d'Orchi as the most satisfactory. I think we have in them the true features and general appearance of Columbus; the d'Orchi at an earlier, and the Capriolo at a later period. Carderera considered the Capriolo engraving the most valuable of all the representations of Columbus with which he was acquainted when he wrote his article on Don Angel de los Rios' report in 1879,* and so far as my information has extended, that appears to be generally the opinion of artists and those most competent to judge.

I will now show you the more prominent of the pictures that have been supposed to be portraits of Columbus.

This is from an engraving in a work published by Thevet in 1586, who says he engraved it from a portrait that he found in Lisbon. It is not probable that Columbus had his portrait painted at the early period

* Boletín de la Real Academia de la Historia, Tomo I., Cuaderno III., p. 258.

that he was in that city, and this represents a much older man than he was when in Portugal. It has a great profusion of curly hair, a very large hawk-like nose, with a heavy moustache and large beard covering up the lower part of the face and leaving little to distinguish the general features, and contour of the face.



THE THEVET PORTRAIT.

Theodore De Bry published for some years and in several languages a serial known as his *Collection of Voyages*. It has many imaginary things, and is a work of little value except to collectors, from its curious engravings and the difficulty of obtaining complete sets of it. The fourth part of this collection, which was published in 1594, has an engraved medallion head of Columbus. It is very small, about three-quarters of an

inch in diameter, and in the form of the head, the curve of the eyebrows, the aquiline nose, and, so far as it can be discerned, what appears to have been intended for a depression in the chin, it may be said to have some resemblance to the early portraits, but in other particulars it is unlike. The fifth part of this collection, published the following year, 1595, contains another and a very different engraved portrait of Columbus, which is the one here shown, and is now known and referred to as the De Bry. In the text of the work he gives this account of it: "Since Columbus," he says, "was a man of sagacity, of great intellect and courage, the King and the Queen of Castile, before he departed from them, ordered that his likeness should be taken to the life by some most excellent painter, so that if he did not return from that expedition, they might have some memorial of him, and I found to my great delight a copy of this portrait recently, after finishing the former fourth book, with a certain friend of mine, who had received it from the painter himself. I wished you also to have part in this, and to that end have had the likeness cut in copper by my son, in a small form, as perfectly as it could be done, and now show and present it to you." And then says, "and in truth the virtue of the man is altogether such as to deserve that his likeness should be laid before the eyes of all good men, for he was an upright man, courteous, magnanimous, and of good morals; a very firm lover of peace and justice." From the position of these words in the text, "*ab ipso pictore*" (from the painter himself), an ordinary reader would suppose that De Bry's friend received the copy from the painter to whom Columbus sat for the por-

trait, and this I think De Bry meant the reader should infer, as it would enhance the value of a book embellished by the engraving of a man whose virtue, he informs the reader, "was such as to deserve that his likeness should be laid before the eyes of all good men." If this was what he meant, that the copy was obtained by his friend from the artist who painted the original, the fact was scarcely possible, unless the artist had reached an extraordinary age, for in the year in which De Bry says he received this picture, 1595, Columbus had been dead for ninety years.

Spotorno refers to another statement of De Bry relating either to this or to the medallion head of the previous year, which Spotorno gives as one of his reasons for impugning the authenticity of the De Bry portrait. "Theodore De Bry," he says, "pretended that he possessed a portrait of the hero, the same that was to be seen in an apartment of the Council of the Indies, from which place, having been stolen and carried to the Netherlands for sale, it came finally into the hands of De Bry, who gave an engraving of it in his America."* There is no evidence that there ever was any portrait of Columbus in any apartment of the Council of the Indies, and moreover an exhaustive search was made in inventories and other records of the royal establishments of the reign of Ferdinand and Isabella, and down to and including that of Philip II., for any evidence that a portrait of Columbus had been in the possession of either of these sovereigns, and none could be found.

No reliance, I think, can be placed on the statement of

* Memorials of Columbus, p. cxvii., London, 1823.

De Bry. Navarrete distrusted it (*Memorias*, vol. viii., p. 18; *Boletin* I., 3, 245). Professor I. D. Butler, in his *Monograph on the Portraits*, calls it "a Dutch imposture," and that the whole account was fabricated may fairly be assumed from the fact that the per-



THE DE BRY ENGRAVING

sonage represented in the engraving in no way conforms to the description of Columbus by his contemporaries, and is wholly different from any of the portraits that are known to have been in existence before it.

There is nothing in it indicating the intelligence, acuteness and ideality we should expect to find in a portrait of Columbus. It is a heavy, stolid head with elaborate curls under a barret cap, and has three prom-

inent warts upon the face. If Columbus had three such deformities upon his face as these, his contemporaries who have described his features with so much exactness would, I think, have mentioned it.

The head in this engraving is shrouded in the large hooded cap formed from the chaperon, which came into use in the middle of the 15th century (Lacroix, *Manners and Customs of the Middle Ages*, p. 533; Planche, *Cyclopedia of Costume*, vol. i., pp. 294, 295), and the hooded cap and robes strike me as being Italian or German, rather than Spanish of the 15th century—the usual covering for the head of men in Spain at that period, as far as we can judge from the paintings and drawings that have come down to us, being the high conical cap and the sombrero.

Some years ago a portrait was discovered, known now as the Versailles portrait, which is claimed to be the one from which the De Bry engraving of 1595 was made, and, therefore, as supporting De Bry's statement. If this were true, however, it would only prove that fact, and would not verify the other part of the story. I have not seen this Versailles portrait, but when comparing the Darmstadt engraving of it with the one in De Bry, I am satisfied that instead of its being the one from which the De Bry was engraved, that it was painted from the De Bry. During the three centuries that have elapsed since De Bry's book was published there have been many reproductions of the De Bry, chiefly engravings. I have many of these engravings in my possession, and in most of them the engraver, or draughtsman, has undertaken to improve upon the De Bry by making it more artistic and effective. To

do this many liberties have been taken and material alterations have been made. This is the case with the Versailles portrait. It has evidently been painted from the De Bry engraving by some artist during the three centuries that have intervened, who, whilst preserving the resemblance, has undertaken, and succeeded, by making material changes, in producing a much more artistic and finer work of art. It differs from the engraving in these particulars. The representation of the hair is not the same, the elaborate curls of the engraving being discarded. The position of the face is changed so as to give it a different expression, and the mouth is altered. Instead of the corrugated face and deep wrinkles of the engraving, the face is smoother and broader, the three prominent warts are not on it, and the figure is clothed differently. If De Bry's son had engraved from the painting, it may be assumed that he would not have put three warts upon the face, which were a deformity, when there were none in the picture, and this, with the other material differences, convinces me that the painting was made from the engraving and not the engraving from the painting.

I have been thus particular in respect to the DeBry because this representation of Columbus, which has nothing to support it but De Bry's statement, has been more multiplied and has had more prominence than any other. It has been inserted in several works as his true portrait. There is an exquisite engraving of it, by Raimondi or some other Italian artist, and the recognition of it still continues. At the late Centennial celebration in this city it was the chief decoration of

the City Hall, and the one that adorned the front of the Herald office.

This portrait is by Parmigiano. I show it, because so distinguished a writer as Prescott has given it in his *History of the Reign of Ferdinand and Isabella* as the portrait of Columbus. I have seen it in Naples. It is a very fine picture, and evidently the work of that eminent master. It is sufficient to say that Parmigiano was three years of age when Columbus died, and if he intended it as a portrait of Columbus it was a work of imagination. It has a large moustache and long beard, neither of which was worn in Spain until long after the death of Columbus. It is probably the portrait of some distinguished Italian nobleman.

This is by Antonio Moro, a celebrated painter, a native of the Netherlands, who went to Spain in 1552 and was largely patronized by Philip II. The picture, which is an admirable work of art, is said to have been in one of the vessels of the Armada that was wrecked off the coast of Great Britain, and to have come into the possession of an English family. It has a moustache and ruff, neither of which was worn in Spain in the time of Columbus. It is now in the possession of Mr. Gunther of Chicago, who is said to have paid a large sum of money for it.

This is the one published by Muñoz in his work in 1793. It has, like the previous portrait, a large ruff, and has nothing to support it, except the reputation it acquired by being printed in Muñoz's work.

This is the one found by M. Jomard, an eminent member of the French Academy, about fifty years ago, in a gallery at Vicenza in Italy, with the name of

Columbus upon it, and all that he could learn was that it had been bequeathed to that city by a family residing there. That it has a peaked beard, a large moustache and a full ruff is sufficient to show that it represents a person who lived a century after Columbus. The eminence of M. Jomard as a scholar and his belief in it gave it for some years considerable prominence.

Mr. Harris states that there is a portrait in the Arsenal of Cartagena in Spain of Columbus, for which he is said to have sat. In 1852 the committee, of which Carderera was chairman, being authorized by the Spanish Government to prosecute their investigation in all parts of Spain, and all Spanish officials being required to afford them every facility, caused enquiries to be made, among other places, in the Arsenal of Cartagena, and were officially advised that there was no portrait of Columbus there. As this was more than forty years ago, I thought I would have an enquiry made this year, and accordingly wrote to a friend in Spain, who had a correspondent in Cartagena, to whom he wrote, and who replied that the general in charge of the arsenal having been but recently appointed, he applied to his secretary, who had been in the office for years, and also to the general in charge of the Department of Construction, who had been in the arsenal as long as my friend's correspondent could remember, and to several other officers employed in it, and none of them had ever seen, or heard of any portrait of Columbus there; the correspondent adding that the only thing in the arsenal relating to Columbus was a marble statue of

him, made in Naples in 1876, and which had recently been presented by the government to the town.*

I will now call your attention to the Albany portrait, because it has for many years had a prominent place in the Senate chamber of this State, and has been claimed to be authentic, with nothing whatever to support the claim. It was presented to the State by Mrs. Maria Farmer in 1784, after failing to sell it, as appears by an advertisement of the period in *Rivington's Gazette*. In her communication to the State she said that it was a copy of an original painting of 1592, which had been in the possession of her family for 150 years. It in no way resembles the description of Columbus by his contemporaries or the earlier portraits. Wm. Henry Bogert, the Clerk of the Senate in 1850, made an official report to the Senate upon it, in which he said: "The facts of a curious and eventful history cluster around this portrait. Its lineage is far better supported than that of most pictures presenting like claims, and every research made in respect to it has only confirmed its authenticity." It is extraordinary how men will write like this where they know nothing; and my old friend Mr. Bogert, who is not now living, would have been greatly mortified if I had told him what I thought of his statement.

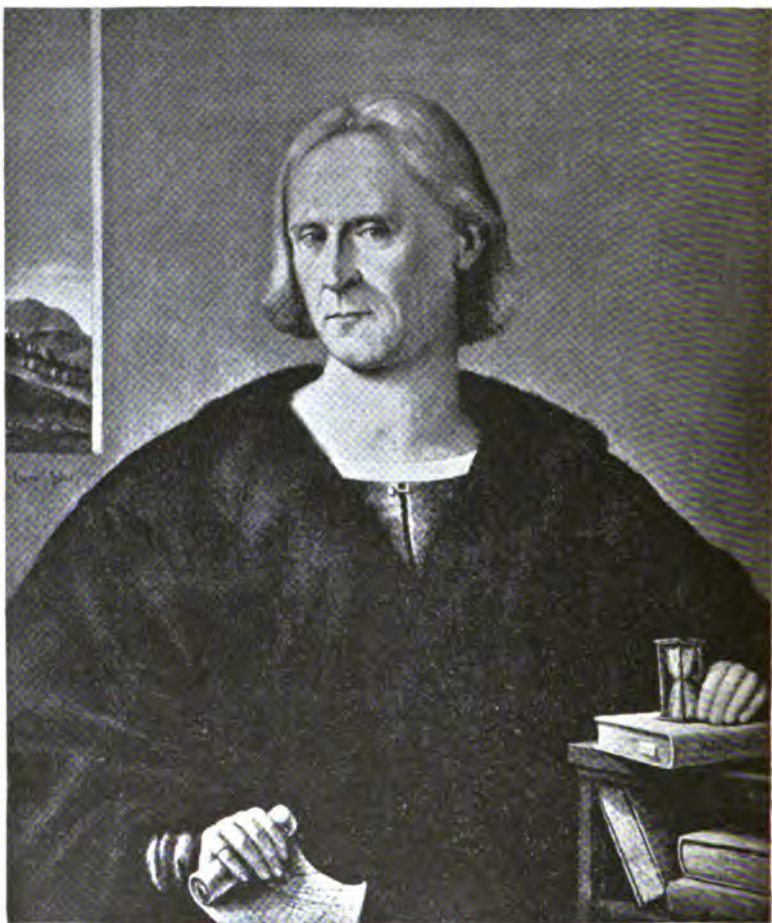
I might refer to some other portraits, such as the Juan de la Cosa, the Montanus of 1671, the Berwick-Alba, the Malpica, the Cladera, the Venetian Mosaic,

* I have since received communications in writing made by the Secretary of the Governor in charge, and of the General in charge of the Department of Construction, stating that there is no portrait of Columbus in the Arsenal, and that they never heard that any portrait of him had been there.

the portrait presented by the Duke of Veragua, the descendant of Columbus, to the city of Havana ; the Hone portrait, engraved for Edwards's Work on the West Indies, the Flameng etching, reproduced in the work of Belloy, the Giulio Romano in Genoa, the Hermitage in St. Petersburg, the Hull portrait in Connecticut and the two portraits, one a miniature said to have been given to an official in Washington by Sophia Matilda, Queen of Holland, and a larger one on panel, with a carefully painted ruff, which are in the possession of the Hon. Wm. A. Bryan, of Morristown, N. J., and some others ; but I shall pass them by, and refer only to the last one that has been brought to public attention, that known as the Lotto portrait, now owned by Mr. Ellsworth of Chicago, which has the signature of Lorenzo Lotto, an eminent painter of the Venetian school. Mr. Harris has denied eight of the statements put forth in an account of the history of this picture, and has shown that the map which the person represented holds in his hand is the one made by Johannes Ruysch, which first appeared in the Ptolemy, printed at Rome in 1508, the earliest engraved map of America that is known ; "and as we are told," Mr. Harris says, "that this picture bears the date of 1502," which would be six years before this map was published, he pronounces the picture a fabrication.

Mr. John C. Van Dyke, however, in an article in the *Cosmopolitan Magazine* of last October, gives the date of the picture as 1512, "though," he says, "the date has been hastily scumbled over with gray paint." So that whether Mr. Harris has been misinformed as to the date, or the date has been altered to 1512, is a matter

to be determined only by an expert. Under these circumstances the picture is not free from suspicion, for it



THE LOTTO PORTRAIT. .

has not been unusual for pictures to be fabricated and sold as works of eminent masters that have deceived accomplished experts.

Mr. Van Dyke's paper is one that has been carefully considered by a writer well informed on the subject upon which he writes, and his reasons, therefore, for believing it to be a portrait of Columbus are entitled to respectful consideration. Assuming the portrait to be a genuine work of Lotto, as Mr. Van Dyke believes, and he is evidently well acquainted with the works of that master, the first enquiry is, what is known as to its history to warrant the belief that Lotto painted it as a likeness of Columbus?

Mr. Van Dyke admits that it cannot be traced beyond a certain Italian family that he names, and that at a comparatively recent period a person named Gandolfi, to whom it had been sold, had it somewhat repaired and restored. Mr. Van Dyke further says that from 1500 to 1503 no one knows where Lotto was, that he might have been in Spain and may have sketched Columbus from life and never finished the picture until 1512, but that it is more likely that Trivigiano, who was an intimate friend of Columbus, and who had an elaborate map of the newly-discovered countries made for Domenico Malipiero, a Venetian senator, about 1501, brought, with this map, to Malipiero in Venice some sketch or portrait of Columbus, as a complement of the map, and as a present to the Venetian senator; as Trivigiano, he says, in a translation sent by him to that senator of the first book of Peter Martyr's *Decades*, has a description of Columbus in these words, "Christopher Columbus, a Genoese, high, tall, red, very clever, with a long face," which he thinks "is insufficient and meaningless, unless accompanied by a sketch or portrait of the man, and that it is not impossible that such a

sketch, or portrait, served as Lotto's model for this larger picture."

This is all matter of conjecture, the bearing of which depends altogether upon whether it receives any support from the picture itself, which I have not seen. I can judge of it only by the engraving that accompanies Mr. Van Dyke's article, and deriving my impression solely from that, I should say that it does not.

Mr. Vandyke divides the portraits which are regarded as possibilities into two types, the Jovian, of which he says "the D'Orchi and the Yañez are examples, and the Ligurian type, of which the Ministry of Marine portrait of Madrid is a later and the Lotto an earlier presentation, and perhaps the archetype." He says that "the difference between the two men shown in these two portraits is slight indeed," and such as "might result from two different artists" viewing the same sitter, or the sitter himself being seen at two different times or ages, or from the careless restoration from which both pictures have suffered." He was evidently not aware that the Ministry of Marine portrait was painted about half a century ago, and has undergone no restoration; that the head of Columbus in it was copied from the Capriolo engraving of 1596, and that the dress was taken from the Yañez portrait as the Yañez portrait then was. It is better, therefore, to compare this portrait by Lotto with the Capriolo engraving, and upon doing so, instead of the difference being "slight indeed," there is a wide and irreconcilable difference. The Lotto has not the same round, prominent, bony orbit of the eye that is found in the Capriolo engraving, in the Altissimo, the d'Orchi and the six other

of the nine early portraits to which I have referred ; showing that the anatomical structure of this part of the head in the Lotto is different from all of the others. They have all, as a most marked characteristic feature, broad, lofty, arched eyebrows ; whereas, in the Lotto, the eyebrow is straight, with a drooping lid, that gives to the whole countenance a sinister expression, and instead of the "tinge of melancholy" that Mr. Van Dyke sees in the face, the face looks to me like that of a man who was frequently, if not habitually, cross.

Jovius, in his eulogy upon Columbus, obviously referring to the portrait in the gallery at Como, speaks of him as "this man with a most open countenance, of unexampled greatness of mind, and with the astonishing vigor of a great intellect," and in giving thus the appearance of a man in a portrait, he was writing about what he understood, for we have the authority of Vasari that Jovius was a man of much knowledge and judgment in matters respecting the arts in Italy.* No one would think of designating the personage in the Lotto portrait as a man "of a most open countenance," while it would not be an inapt designation of the man in the earlier portraits I have referred to, including the Jovian wood-cut, imperfect as it is.

There is another difference. All these nine portraits represent a man with not an over-abundant head of hair, and that turned up and off from the forehead and sides of the face in natural curls. It is, in every one of them, what would be called a curly head of hair. In the Capriolo engraving the hair is much fuller than

* Vasari's *Lives*, etc., Bohn ed., Vol. V., p. 531.

in the others and falls down in long curls. But in the Lotto portrait the hair is not curled at all. It is long, straight and lank, and instead of springing up from the forehead as in the other portraits, it is there divided and falls down at the sides, in long masses, close to the shoulders, where it is trimmed evenly, so as to be of uniform length. In fact, the disposition of it is such as to make it so characteristic a feature in the man's likeness, that the artist, with a certain freedom of touch and considerable artistic skill, has evidently given an exact representation of it. It gives to the whole face a peculiar expression and in this feature is unlike any portrait that I can recall, except that of the musician Liszt. Mr. Van Dyke, recognizing, I suppose, its difference in this respect from the other portraits, cites the authority of Carderera for the fact that "in the Columbian period, among the better classes the hair was as long as to cover the ears, and cut in a horizontal line." But this does not reconcile the difference that in the Capriolo engraving, and in the other pictures, the hair is curly, whilst in the Lotto picture it is straight, and instead of curling upward from the forehead or falling in curls at the sides, as in the other pictures, it falls down straight in every part.

There is nothing in this Lotto portrait to indicate the man "with marvellous intuitions" of Peschel, or "of great energy and an iron will," as stated by Mr. Ponce de Leon, which is recognizable however in the capacious eyes and strong face that is found in the Capriolo engraving and in other of the early portraits. I do not see in it, as Mr. Van Dyke does, the "air of authority," and the "mariner" and "commander," but

simply a gentlemanly-looking personage, with somewhat of the keen and scrutinizing eye of a scholar, and instead of "the reproachful and half disdainful look" that Mr. Van Dyke finds in the face, the general expression of the face, as it appears to me, to convey it by a single word, is peevish. It is not a satisfactory picture upon which to found the belief that it is a likeness of Columbus, and it is greatly to be regretted that the United States Government, in commemoration of the Centennial year, should have stamped it on two millions of the silver currency of the country, and engraved it upon the postage stamps as a reliable representation of the person of the great discoverer. The Ligurian type shown in the portrait of the Ministry of Marine, Mr. Van Dyke says, repeats itself in succeeding engravings and ideal portraits, and is so familiar, he says, that painters of the present day adopt it in historical paintings of Columbus, and that "it seems to be the popular conception of what the discoverer ought to be." My investigation of the whole subject satisfies me that the popular conception is right, and if our Government had followed it, it would have been more creditable than to have adopted a portrait that has but recently been brought to the public attention and will not, as I have undertaken to show, bear the test of investigation; and with this criticism of the last picture that has been brought forward as a portrait of Columbus, my address will close.

MR. CARL LUMHOLTZ IN NORTHERN MEXICO.

The following letter was received on the 28th of February :

GUADALUPE Y CALVO (Chihuahua),
18 January, 1893.

. . . It is very discouraging to mail anything from here, because letters so often get lost . . . I have for some months been living such a secluded life with the natives, that an opportunity of mailing a letter but rarely offers itself . . . Since the month of July, last year, I have been travelling alone, studying the little known Tarahumare Indians.

I travel something in the manner of an Indian trader, only rougher, accompanied by one or two Mexicans, the rest of my party being made up by Indians.

In the "barrancas" which, like gigantic cracks some 3-4000 feet deep, traverse this part of the Sierra Madre from east to west, live *gentiles* (pagan) Tarahumares, who to me are the most interesting objects of study.

They cultivate maize and beans in a small way, also chilly and tobacco, and as soil fit for growing anything is scarce in this wild, rough region, they erect stone walls to secure whatever earth the rain may favorise them with from the mountain slopes, and thus terraces for cultivating are formed, exactly of the same kind as I farther to the north found, abandoned ages and ages ago. They are in possession of the domesticated animals introduced by the Spaniards, but all in a very small way; they may also possess an iron axe or a knife, but in every other respect seem to be entirely untouched by Spanish influence. They don't speak Spanish, and are extremely timid, leaving everything behind at the sight of a stranger. They are small, but well formed and muscular, very active and extremely able to endure exertion. Their faculty of running must surely be unexcelled. When becoming civilised, the Mexicans use them for running in wild horses, in which they always succeed, bringing the horses played out in to the corral—often two or three days' work.

They still dance their *Rutubóry* and *Yálmory* to ensure good crops; and at thanksgivings sacrifice meat and maize beer to their god, and worship several plants, one of them, called *Átkory* (Spanish *Peyote*), also being prepared into an intoxicating drink. This peyote has at first a very refreshing and enlivening effect upon one's nerves, but afterwards produces a shivering feeling of cold, whose unpleasantness is so great that many of the natives cannot take this drink on this account. But it plays a great part with their religious system, and it was only because a profane man like myself was known to be in the possession of four specimens of the plant, that I once at my request was favored with a drink of the magical *Átkory*; on condition, however, that I took off my hat and sat down among the most favored men during the ceremonies. These feasts are always going on through the whole

night, and as formally and nicely as everything then is conducted, as shocking is it next morning, when the ceremonies are over, to see them all get drunk on the same beer of which they always first sacrifice to their god.

No doubt that the Tarahumares always liked to live in caves, for I find that some of them have within the memory of man changed their caves for miserable shelters of wood, moving away from the slow progress of the Mexican civilisation. At present, many of the so-called Christians live in caves during the cold weather, while a few are permanent cave-dwellers; but as regards the *gentiles* the result of my investigations so far is that many of them are permanent cave-dwellers, while during the winter almost all are so. As far as I as yet see, they have nothing to do with the cave and cliff-dwellers of the United States.

However, I yet need to be confirmed in this opinion. Also the northern Pimas, and the Tepehuanes to the south and west of them, share to a certain extent this peculiar mode of living.

As the *gentiles* are very poor, particularly now on account of the three years' drought, I sometimes have difficulty of procuring even the food that I mostly have to rely upon—maize and goat's meat—but as I have the happy faculty of liking all sorts of new native dishes (mostly herbs and fruits and roots) I go rather easily through what others would call privations.

I walk on foot with my Indians in the deep and wild barrancas, having to wade up to the waist more times than even I, with my fondness for cold water baths, exactly care for, in the at present ice cold waters of the rivers. But one can stand anything in a climate like this, for the climate of the Sierra Madre is superb, or, as the doctor in Guadalupe y Calvo expresses it, distressingly healthy. Chest complaints are here unknown and I am told that neither cholera nor the grip, (the) last time these diseases reached the mountains, could make any havoc here. Small-pox is the most serious disease among the Indians, who time and again are decimated by the plague.

On my recent return from the border towards the State of Durango I ascended the Cerro de Muinora in the southern neighborhood of Guadalupe y Calvo. It is probably the highest mountain in Chihuahua, I say probably, because I had not an opportunity of ascending the Cerro de Candelaria near Chuhuichupa. My aneroid showed 20.60 inches, temperature 38° Fahrenheit. Water boiled at 192.2,° temperature 51°. I surely think Muinora the highest.

I am now on my way to Nabogame and Baborigame where Tepehuanes live, and from there on I will visit the numerous *barrancas* and *arroyos* (streams) that traverse the western part of the Sierra north of here, until north of the Barranca de Urique; these are extremely interesting because here the most primitive Tarahumares are to be found.

I am writing down the language of the Tarahumares and the Tepehuanes, and am taking measurements and photographs of the people. I shall hope, when in a few months' time I am through with my present work, that my researches will help somewhat to throw light on the early history of the American race. . . .

Yours Sincerely,

CARL LUMHOLTZ.

THE MISFORTUNES OF AN OBELISK.*

BY

ALEXIS A. JULIEN, PH.D.

It is not as a traveller that I come before you, but, by proxy, in behalf of a traveller, an aged traveller, who, after a journey of some five thousand miles—carried on somewhat leisurely, in truth, since it covered a trifle over thirty-five centuries—has lately settled down, within our quiet borders, in the hope of a little repose. By a part of our citizens the strange newcomer upon the knoll in our Park, from its arrival in 1881 even until now, has been looked at askance. For wanderers from every clime, there was room within the Park wall:

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for shrubs and flowers of every form and hue ; for exquisite carved work in soft freestone, daily rotting into sand ; for apes and costly hippopotami ; but as for an Obelisk !

I come indeed to plead the cause of a priceless monument in danger, which was put in the keeping

D'Avennes, Prisse, Achille Constant Théodore Émile. *Histoire de l' Art Égyptien, d'après les monuments depuis les temps les plus reculés jusqu'à la Domination Romaine.* Two vols. Paris, 1878.

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of New York twelve years ago. If once convinced of the danger, the influence and efforts of the intelligent citizens of New York, and of its responsible officials, will surely be exerted to save the name of our fair city from the certain disrepute, or disgrace, which will follow any neglect of such an accepted trust. The public

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interest in this monument has not waned, I am sure, outside of this city. A few weeks ago, a friend from a country village, on a hurried visit to New York, wished to be shown first our two surpassing attractions, in his eyes, "the Brooklyn Bridge and the *Pyramid!*" Of course he was assured that if our merchants undertook to import a pyramid, that pyramid would have to come; but up to this time only an Obelisk had arrived.

With that ancient Egyptian Obelisk, for the last nineteen centuries in Alexandria, which now looms up with surprise in the midst of our modern city, you are all doubtless familiar. You have heard of crumbling decay which threatened its sculptured surface until eight years ago—of the water-proofing process then applied—of the appointment, in 1889, of a Committee of Experts by our Commissioners of the Public Parks, to examine the Obelisk, and their unanimous report that the process had been found so entirely satisfactory in stopping all visible decay over the general surface, that it would be wise to deepen its action in certain cracked spots by a new mode of application, whose details were worked out by a second Committee in July, 1890. Let us then ask to-night, is this ancient relic worth to us the constant attention, watchful care, and a certain amount of expense involved in its protection? Is it of any real value to the City of New York?

I will offer a few thoughts—in part, gathered from the works of Gorringer, Moldenke and others—on the *significant idea* of the Obelisk, with examples from nature, prehistoric monuments, and early records in Asia and Europe: a brief history of our own peripatetic monolith until it swam over the sea to its present site,

in 1881 : our entire neglect of it and its rapid decline, until 1885 : and the steps since taken, or left undone, for its protection from our fierce climate.

1. *Natural Obelisks.* First, consider some strange forms in natural scenery, towering rock shapes, hewn by the lifeless forces which spring from the Sun. Through the very ravages caused by its rays, the Sun becomes a builder, an excavator, a sculptor of wonderful outlines in stone. Here, on some broad plain, as in Colorado, he calls the winds out of the Ocean of Air as his stone-cutters, whirling along the keenedged sand-grains as tools, biting into the cliffs of sandstone or limestone, and scooping them out into curious domes, castles, turrets, and slender spires of rock, like the Cleopatra's needle in the Garden of the Gods, Colorado—all carved by the force of the Sun. Elsewhere the bosom of the Sea is lashed into billows, which hurl themselves in thundering surf upon the breasts of rocky coasts. There the Sun-force sculptures walls and piers, arches and lofty columns, such as the Stacks of Duncansoy, in Scotland. Or again, gently and silently, by the trickling rain-drops, which the Sun has lifted high as vapor and then let fall, and by fierce heat of summer rays, and by prying of winter frost, which is but the recoil of a spring long compressed by solar force, the same Patient Sculptor quietly loosens and undermines and picks away a mountain-wall into tall pillared forms, like the Cleopatra's Needle at Devil's Lake, Wisconsin. All over the earth, great stone fingers are thus left, pointing meaningly upward at the falling darts of the one Vast Force in nature, the blazing orb which has carved out these, the most ancient and stupendous of Sun Obelisks.

2. *Prehistoric Obelisks.* It is not strange that these weird forms were early imitated by man, especially near rocky coasts along which such natural pillars abound, as those of Brittany. There colossal rude pillars of stone, like those at Carnac (Morbihan),* were set up by prehistoric races, of whose times and of whose very names we have now little or no record. Sometimes these were solitary columns, like the Standing Stones of Dunbar and Lundin Links, in Scotland. Or these were massed in rows which stretched over the land for miles like the *menhir* of Brittany. Or we find them, perhaps, lifting their heads in clusters, like the lonely groups in Sweden and at Stennis and those among the desolate mountains of the island of Arran, off the west coast of Scotland. Or the same Standing Stones meet our view in the significant arrangement of a ring like the disc of the Sun, such as the so-called Druidical circle at Callernish, on the island of Lewis. Or it may be, in some solitary dell in Asia Minor, there stands a circle, about which the peasants tell the tale of the wrath of an enchanter of old, who, as a wedding party merrily crossed the plain, turned them suddenly into stone; and there they stand—is it sadly or gladly? bride and bridegroom and all—a petrified honeymoon for a thousand years, without a cross word! In most cases, a great stone shaft rises in lonely grandeur in the middle of some broad plain, like the standing stone at Loch Eynert, the primitive form rudely hewn but impressive, of the Obelisk of Prehistoric Time. Its meaning, to the ancient people who set it up, is now but a subject for conjecture. Is it only a fancy, that,

* Miln, *op. cit.*, 199.

gilded or reddened by the blush of dawn, this glittering column of crystalline granite suggested to the human mind, even then, a fitting and cheery emblem of the first beam which shot up from the glorious disc, rising



• **STONE AT LOCH EYNERT, SCOTLAND.**

from the horizon, which, from earliest times, as a symbol of Almighty Power, has received the adoration of our race ?

That these rude stones were indeed Obelisks appears to be confirmed by the common application of that term to them by early travellers in Scotland, Thos. Pen-

nant, Brand, etc., and by the surviving reverence of the peasantry toward them, through Saxon and Danish down to Christian times. A curious example of this was found in the Obelisk at Ruthwell, a square shaft about 20 feet in height, and 18 by 16 inches at the bottom, but in three pieces," broken by an order of General Assembly in 1851, under pretence of its being an object of superstition among the vulgar."*

3. *Prehistoric Tumuli.* But often, not far away from the upright menhir, another low object catches the eye, which suggests sorrow and loss. It may be a natural hummock or cone of earth, which tells where the trunk or stump of some great tree has crumbled away into dust. It may be a low mound or barrow or cairn, under which the bones of a slain warrior are entombed. Or it may swell into a broadly based, conical tumulus, fifty or even a hundred feet in height, beneath which a viking lies at rest.

These two are the monuments, roughly shaped, of the prehistoric races ; the one, an upright column of stone, bright like the sun-ray, suggesting light, birth, life, hope ; the other, a cone-shaped gray mound, speaking of sadness and death. Sometimes we find even the rude column surmounting the mound, like the " bauta-stone " upon the barrow, near Gödestad in Halland.†

4. *Distinction of Stelæ.* We may here, in passing, refer to the more carefully hewn pillar of early historic age, which has been often called an obelisk, by Rawlinson and others, but is better distinguished by the Greek name of *stela* — an upright rectangular slab with

* Pennant ; see Pinkerton, *op. cit.*, III., 213.

† Montelius, *op. cit.*, 208.

rounded summit, such as the stela of black basalt from Nimrūd* in Assyria, set up, it may be, as a record of victory, for an epitaph, or as a kind of monumental placard. Such too is the Assyrian stela of black marble, erected by Shalmaneser II., covered with figures in



STELA AT AXUM.

triumphant procession. Sometimes it became dedicated to the king of the nation, vicegerent of the deity upon earth, like the stela, adorned with the sculptured form of King Samas-Vul II. of Assyria: a record, as Defoe puts it, of "the divine right to govern wrong." The most ancient example known is perhaps the round topped stela of Begig, in the Fayoum, Lower Egypt, erected

* Rawlinson, *Five Great Monarchies*, I., 266.

by Osirtasen I., 45 centuries ago. One of the least known, and of undetermined origin, is the lofty stela discovered by Viscount Valentia, in 1806, at Axum, in Abyssinia, a granite monolith, 80 feet in height.* Other pillars stand, as solitary decorations, in the middle of courts of ancient palaces, like the Assyrian stela in the palace at Khorsabad,† the half-sunken, shrine-crowned pillar of Cashmere, the serpent column of Constantinople, or the great column of wrought iron at Delhi, the Masjíd-I-Kutb ul-Islám, now over twenty feet in height, whose lower part is buried in the soil to at least the depth of forty feet.‡ Others have been raised as memorial monuments to great and beloved citizens, like the curious triangular pillar of white marble, to C. Cassius Philiscus, found by an old traveller, at Nice, in Asia Minor.§ On a smaller scale, in modern times, the obeliscoid form has been commonly devoted to the honor of the dead, like that which stands on a knoll in Rockland Cemetery, where lies asleep he who brought over to us our Obelisk from Alexandria, Lt. Commander Gorringe.

All these stelæ, however, with the upright tablets raised for more commonplace uses, to mark boundaries, goal-posts, mile-stones, etc., have been but secondary forms of use, examples of divergence, to lower objects, from the prominent design of upright stone monoliths in prehistoric times.

Even by the sun-loving Assyrian and Greek, the

* Valentia, *op. cit.*, III., 87, and De Cosson, *op. cit.* I. ch. 11.

† Perrot et Chipiez, *op. cit.*, I. 257.

‡ Cole, *op. cit.*, Pl. I.

§ Pococke, *op. cit.*, II., Pt. II., 123.

noble thought of the Egyptian seems to have been imperfectly understood. The Greek amused himself by applying, to the slender pointed shaft of the Nile valley, the nickname, *οβελίσκος* (a little skewer or spit); but, like many another nickname, this has become a designation of honor.

In Egypt, from the very beginning, the Obelisk was adopted as the symbol of a lovely thought—the pledge of the sunbeam as a gift of life and coming immortality from a Kindly Power, a message of dedication to the symbol of that Power, the most majestic object in nature—(as Whitman calls it) “the splendid silent Sun!” This continues to be to us too, of the Nineteenth Century A.D., of the most fascinating interest, since we definitely know that, from that vast source of light and force come the sigh of every breeze, the roar of the gale, both ripple and storm billow of ocean, every thrill of nerve and swell of muscle, every stroke of wing or fin, every form and phase of life, voice, thought, existence itself!

5. *The Sun in Egyptian Mythology.* This view of the all important relationship of the Sun to man is no novel conception of our own time, science or theology. You will allow me to review briefly some well established facts. The men of earliest history, nowhere more clearly than on the sunny banks of the Nile, felt the same dependence on that brilliant fountain of life and light and joy. Listen to a part of the prayer of Queen Nefer-i-Thi, in the year 1466 B.C.

“Thou Disc of the Sun, Thou Living God! There is none other beside Thee! Thou givest health to the eyes through Thy beams, Creator of all beings. Thou

goest up on the eastern horizon of the heaven, to dispense life to all which Thou hast created : to man, four-footed beasts, birds, and all manner of creeping things on the earth, where they live. Thus they behold Thee, and they go to sleep when Thou goest down. Grant to Thy Son who loves Thee, life in truth : to the Lord of the land, that He may live united with Thee in eternity." *

At the basis of all ancient faiths, the single visible Sun became the natural symbol of the Single Invisible Deity, Amen-Ra, the Hidden One, King of the Gods, with the life symbol in His right hand. All other superior gods of Egypt were but emanations from Himself, and in all cases assumed the addition Ra to their proper names. Thus the Divine vengeance was indicated as another deity with head of crocodile, Sevek-Ra : the Divine spirit, Knum-Ra : the Creative energy, Khepe-ra: the height and depth and omniscience of the Divine Mind, as the hawk-headed Sun-God of Morning and High Noon, Ra or Phre of Memphis, with the head of the bird of loftiest flight in Egypt, the sparrow hawk (like our own eagle), with its keen sight, and soaring and plunging course through the air. All the gods were gods of the Sun.

But with the Sun's daily passing to and fro, and the cheering or depressing effect of his reappearing and disappearing on men's hearts, another phase of the worship of Ra was connected. At the sun-setting, gilding the placid bosom of the Nile, they looked sadly, as at the departure of a friend, but with hope for his speedy return. Sunrise they hailed as fulfilment of their hope, while the hateful darkness fled away. So in the holy

* Brugsch, *op. cit.*, I., 450.

City of the Sun, An or Heliopolis, in Lower Egypt, with the first flight of the sparrow-hawk at dawn arose the glad hymn to Ra-Hor-Khuti, the Rising Sun, the Guardian of the Upper World. At eve, the solemn chant floated over the river to Atum-Ra, or Tum, the Setting Sun, just about starting westward under the stars of night, on his dangerous voyage through the Lower World, till, in the East, the morning came again. In this cloudless Nile-land, bathed in never ending sunlight, we find a cheerful and contented people, to whom life was a delight and but too short, the earth a glad some place they were loath to leave. What wonder they paid their vows to the visible symbol of Ra, whose every ray bore in a friendly hand the gift of *life* to King and Queen and to all their people. Their deepest hope lay in its renewal and eternal continuance, and therefore in the preservation of their bodies for the coming resurrection of Osiris. For their worship was that of the Sunbeam—the token of all that was brightest in human life and hope.

6. *Obelisk and Pyramid.* What more fitting emblem of this idea could the Egyptian set up—what more worthy of our sympathy and reverence—than the Obelisk—a towering shaft of ruddy stone, like the first beam of rosy light which flashes up from the daybreak? This too is the birth, the first suggestion of the Cathedral Spire. Out under the open sky, therefore, should the old monolith fitly stand for all time, to tell us this story.

While the Obelisk thus sprang up significantly on the east side of the Nile—such as that of An—on the side of the Rising Sun, far away to the west, however, and

only there, amid rock-cut cemeteries and subterranean sepulchres, you see the Pyramid, solitary and independent, the solemn emblem of the Sun after its Setting, the midnight Sun of the under-world, the type of death and darkness and the grave, enclosing the mummy of some mighty king. We find here the same contrast as in the prehistoric monuments: the Standing Stone or Menhir has developed into the more shapely hewn and polished Obelisk: the burial Tumulus, the Pyramid. And yet, to the Egyptian mind, Life and Death, they are but one; on the summit of the Obelisk is the sacred crown, the Ben-ben or pyramidion. In fact, like the "baïta-stone" on the tumulus, there are very early instances of an obelisk surmounting a pyramid.

7. *Origin of the Obelisk in Egypt.* A link yet remains missing in the chain of my argument. If both menhir and hewn column have sprung from an idea first suggested by natural, sun-carved rock-needles, scattered over the face of the earth, where in the Nile Valley did the home-loving Egyptian first catch the suggestion of the Obelisk? I would submit to your consideration, that this locality, this birth-place of the obelisk idea in Egypt, was at its extreme southern boundary, under the line of the Tropic, on the Nubia frontier. There on the upper Nile, stood the old city of Sun-t, "allowing the entrance" (as the Egyptian called it), Syené (the Greeks), or Assouan (the present Arabs). Farther north was the site of Thebes, with the temples of Karnak and Luxor, 136 miles below. Still farther down the Nile, we now see Cairo, with the pyramids of Gizeh and the site of An, 560 miles below; and there, Alexandria, on the sea-coast, over 700 miles below.

At Sun-t, a vast rib of red hornblendic granite, (much like our red Nova Scotia granite), juts out from the desolate ranges of the Libyan desert in a belt of remarkably wild and picturesque scenery ; in crossing the Nile, it breaks it up into the famous First Cataract. From the earliest ages and in classic times, as the writings of Seneca and Cicero record, this rugged region had a frightful renown, particularly from the reports of the terrible roar of the waterfall, by which all the inhabitants for miles around were made as deaf as the stones themselves. It was famed also for its "shadowless well," and the locality where, at noon, on the longest day of the year, you might look down at your feet and find that you cast no shadow.

As late as 1714 A.D. came the traveller, Paul Lucas, who, in accounts of former voyages, had announced to the geographers of Europe that, with his own eyes, he had seen giants leaping up the peaks of Thessaly like the steps of a staircase : one-legged men who ran with amazing swiftness : and, at an interview in the desert, the hermetic philosopher Nicolas Flanel and his wife Pernelle, although certainly three centuries after their death.* After his return home from his visit to Syené, he gravely related to Louis XIV. that the waterfalls there fell at several places from a mountain over 200 feet in height, with one sheet thirty feet wide, behind which visitors might pass without wetting themselves ; he also repeated the marvellous story of the Land of the Deaf ; all of which, with the deference properly due to a man of science, was swallowed by the Grand Monarque.

The travellers who have succeeded him, however,

* Champollion-Figeac, *op. cit.*, article " Syene."

unite in enthusiastic description of the wild grandeur of the scenery along the river, in ascending the cataract, mainly due to the vertical clefts which seam the granite walls, as in the well-known rock of Abousir. In the year 1802, the traveller Denon, with the great French Expedition under Napoleon, vividly describes the scenery near the First Cataract, and gives a view, in the desert, of the picturesque Two Mountains, the Djebelain, in which the columnar structure of the granite, throughout this region, is well shown. The sketches of Gau* also illustrate the same vertical fissures, in his views around the First Cataract and farther up, toward the Nubian boundary. Freeman has already observed: "The birthplace of Egyptian architecture is certainly to be looked for in the rock excavations of Nubia, which stretch from the frontier of Egypt as far as the ancient Meroë." †

Concerning this upper part of the Nile, Villiers Stuart writes: "We left pretty Maratta behind us, borne quickly along by the seething waters, and were presently amidst the castellated piles of granite boulders, so well known to all who have visited Nubia."

It is now that we approach the point, after ascending the Nile above the First Cataract, about nine miles above Syené, the island of Aareq't, "the island of ceasing," or Philæ, of which Stuart says: "Just above the cataract, at a point where the Nile takes its course through enormous piles of black granite boulders, its romantic temples and palm groves lie imbedded like a fairy scene amid the surrounding desolation." ‡

* Gau, *op. cit.*, Pl. I.

† Hist. of Arch., 81.

‡ Stuart, Nile Gleanings, 201.

This was, you will remember, to the ancient world, the most astonishing spot upon the surface of the earth : a fitting place, as we might anticipate, for the birth of one of the world's wonders. To the Egyptian, this region of almost unearthly wildness, was the burial place of Osiris, the true Source of the Nile, the natural holy shrine of Isis herself, for pilgrimage of king, philosopher and priest : where no Egyptian offered to go without express and rare permission, over which no bird dared to fly, by which no fish ventured to swim.

Here, in 1743, came a reliable English traveller, who gives this description : "The rocks here are very high, on which the antient Syené was built. . . . Some of them are in the manner Strabo describes : a rock standing up like a pillar, and a large rock on it, hieroglyphics being cut on some of them. . . . Returning I took a view" (*i. e.*, made a rough sketch) "of some extraordinary high rocks in a regular figure, as represented in the 50th plate ; on them are cut hieroglyphical inscriptions and figures of men and they directly face the north end of the isle."* In the year 1755, the place was visited by a Captain of the Danish navy, and he gives us a view of the same Island of Philæ, from the upper end of the Cataract, with a better drawing of the same lofty mass of columnar rocks, represented on the right.† In his travels, in 1863, Mr. Hoskins observes concerning Philæ : "Few views in the world can rival the one from this, the west side of the great Temple. There may be finer granite rocks in other lands, but where will you find them equally bold and

* Pococke, *op. cit.*, I., 121.

† Norden, *op. cit.*, Atlas, Pl. CXXXVI.

picturesque in their form? Rhomboidal masses, piled one upon another, some of them looking as if they only wanted a wind strong enough to hurl them into the river, combined with palm and acacia trees. . . .

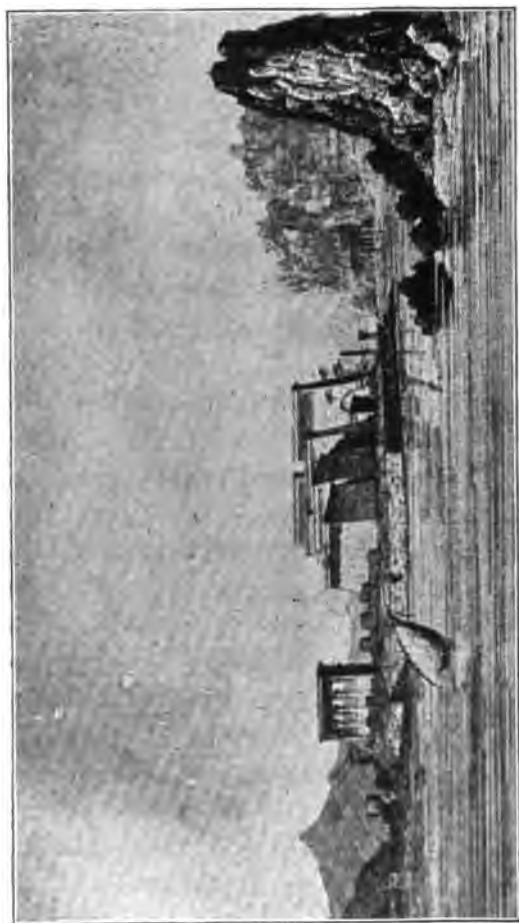
To the right, are three picturesque columnar rocks, covered with tablets of hieroglyphics."* This remarkable column I illustrate from an old drawing.† Again, Bartlett gives us a picture of the approach to Philæ from the north, including the same lofty granite column, on the right. Through all these drawings rough sketches or, it may be, somewhat idealized, the same prominent feature is constantly shown. Such a view is better than a photograph, in one respect; for we need to be impressionists, for our present purpose, and, from the influence of this scenery on modern travellers, form some idea of that produced on the still more impressible mind of the ancient Egyptian. The same wonder and enthusiasm are expressed by the late Miss Amelia B. Edwards, in her description of the view from Philæ :

"Perhaps the most entirely curious and unaccustomed features in all this scene are the mountains. . . . Other mountains are homogeneous and thrust themselves up from below in masses suggestive of primitive disruption and upheaval. These seem to lie upon the surface, foundationless; rock loosely piled on rock, boulder on boulder; like stupendous cairns, the work of demi-gods and giants. Here and there, on shelf or summit, a huge rounded mass, many tons in weight, hangs poised capriciously. . . . But the most amazing of all is a natural monolith on the east

* Hoskins, *op. cit.*, 295.

† Champollion-Figeac, *op. cit.*, Pl. 78.

bank, down by the water's edge opposite, near the carob-trees and the ferry. . . . Though but a sin-



PILLARED ROCK, OPPOSITE NORTH END OF PHILAE.

gle block of orange-red granite, it looks like three ; and the Arabs, seeing in it some fancied resemblance to an arm-chair, call it 'Pharaoh's Throne.' Rounded and polished by primeval floods, and emblazoned with royal

cartouches of extraordinary size, it seems to have attracted the attention of pilgrims in all ages. Kings, conquerors, priests, travellers have covered it with records of victories, of religious festivals, of prayers and offerings and acts of adoration. Some of these are older by a thousand years, and more, than the temples on the island opposite." * Here, therefore, at Philæ, I think, was the birth-place of the very idea of the Obelisk. To this huge natural shaft, Pharaoh's Throne, and the numberless upright pillars of granite which loomed up around and above the First Cataract, the Egyptian mind probably owed its first impression of that which was to become an imposing feature of the national architecture.

8. *Granite Quarries at Syené.* The invariable source of the material for the obelisks was found very early in excavations a little below the Cataract at Sun-t or Syené, which developed into the famous quarries, probably the most ancient in the world. These yielded the bright colored and durable stone suitable for a representation of the sunbeam, the rose-colored granite, "machet" or "heart-stone," as the Egyptians called it. With chisels of copper, and perhaps of iron, and copper saws fed with sand or corundum, the old quarrymen managed to cut long series of shallow holes along every quarry-face, now left as rows of wedge-marks along the ledges. In these holes, some think, wooden wedges were tightly driven, whose swelling, after wetting with water, caused the splitting away of the selected block. According to another view metal wedges were inserted in the holes, as now in our own

* Edwards, *op. cit.*, 231.

quarries, whose continuous beating from one end toward the other, at one time, by great gangs of workmen, caused the stone to part.

You are probably aware, through the public journals, that the State of Wisconsin has just flung defiance to Ancient Egypt in the production, for the Columbian Exposition at Chicago, of a monolith obelisk, 115 feet high, 10 by 10 feet at the base, and 4 by 4 at the top. This is indeed $9\frac{1}{2}$ feet taller than the Lateran obelisk at Rome, the highest Egyptian obelisk which happens now to be standing. With five steam channellers, it was cut out, at the Prentice Brown-stone Quarries, in three months and a half, all but the loosening of the bottom of the stone from its bed. This was accomplished by wedges, and is thus described :

“For this work wedges had been entered, and all that remained to be done was to drive them, upon a given signal, until the rock was wholly separated. Fifty men were carefully selected for this work, and with mauls raised, on November 18, they waited for the signal.

“The word was given at 11 o'clock by President Prentice, of the Prentice Brown-stone Company, who donates the stone to the State of Wisconsin. At the sound of his voice the mauls descended. As each man struck a wedge he stepped forward, from the base to the apex, striking a wedge at each step. The men kept step like soldiers, and the fifty mauls descended as though wielded by one man. The first crack appeared at the base. It gradually widened and spread as the blows continued to descend, until, at last, the entire shaft separated from the ledge. There was a

slight tremble at the moment of complete parting, and there lay the great monolith."

But this stone is, after all, but brown-stone, not granite, and it is simply to be dressed before it is borne to Chicago, in place of the elaborate sculpture in hieroglyphics, polishing and gilding which the intensely hard granite obelisks of Egypt received. The enormous unfinished obelisk, 95 feet long, with a base 11 feet square, which still lies in one of the old quarries of Syené, is over 400,000 pounds heavier than the monolith of the Wild West; it is roughly hewn on three sides, but underneath yet undetached from the rock.

We may gladly remember that there are no associations of oppression or sorrow connected with the construction of the obelisks. It required the most skilled, and therefore willing labor. The words of one thorough Egyptologist, in regard to another class of monuments, may here be recalled :

"It was not an enfeebled race of captives who built the pyramids, groaning under the lash as they toiled, but a youthful and vigorous nation, who, during long centuries of peaceful inactivity, spent their superfluous energy in joyful labor, to accomplish an almost superhuman task, under the very eyes of princes whom they revered as divine."*

There is no evidence that the hand of a slave ever rested upon our own Obelisk, except, it may be, in later times, as an emblem of hope and coming deliverance.

9. *Various Egyptian Obelisks.* In regard to the antiquity of the obelisk, there is one record, now nearly

* Ebers, *op. cit.*, I., 139.

5000 years old, showing the obelisk of Khufu, with its attendant priest, in the Fourth dynasty, sixteen centuries before the quarrying of our own obelisk began. In many very old hieroglyphic inscriptions, the symbol of the obelisk (tekhen) stands among the characters, in one inscription within a pyramid. The figures of a pair of obelisks remain sharply cut on two faces of the London Obelisk; and a corresponding pair is recognized, half-effaced, by Dr. Moldenke, on the south side of the New York Obelisk. A similar representation of a pair of obelisks was also found by him on a piece of mummy cloth, a fragment of the Ritual of the Dead.* The oldest obelisk of all, of the IVth or Vth dynasty, about 3000 B.C., was little more than a model, as it was but a little over two feet in height; it was found inside of a tomb at Thebes by Lepsius, and is now in the Berlin Museum. Stuart also has described two others of a small size and simple form, found at Deah Abou'L Neggah, near Thebes, with inscriptions of King Entef of the Eleventh dynasty, about 2400 B.C. But, with these exceptions, all the obelisks occur on the east or morning side of the Nile, where they once stood, always in pairs, before the gates of some temple. However, according to Ebers, small "obelisks bearing the name of the owner were sometimes to be seen near the gates of the Egyptian country-houses."† We owe to Chipiez an imagined restoration of the approach to the Temple of Luxor, which gives some idea of their original position among the flying standards, and of their imposing effect at the end of the long double line of huge

* Moldenke, *op. cit.*, 33.

† Egyptian Queen, Trans. by E. Grove, I. 7.

sphinxes. Those at Luxor were erected by Rameses the Great and his fair queen, Nofre-Tari, about 1360 B.C., and the most perfectly executed of all existing obelisks; so sharply were the hieroglyphics cut, and to such depth (2 inches), that the Arabs managed to mount by inserting their toes. The one on the left, the east, still remains there, but that on the west was taken down by the French, carried to Paris, and there erected in 1836 on the Place de la Concorde, a shaft about 75 feet in height. This western obelisk is shown in the illustration as it stood at Luxor,* upon its original pedestal; this base, however, was left behind by the French, and remains buried.

Forty obelisks of Egypt have survived, down to our day, out of the hundreds which once adorned her temples and palaces. All these are more or less mutilated, only nine now standing in Egypt, ten fallen and broken, and the greater part carried away to foreign lands. In Rome there are nine of Egyptian origin, of which seven probably belonged to the glittering company which once shot up, near the New York Obelisk, in the City of An, viz.:

Campensis Obelisk, on the Monte Citorio, erected by Psametik II. at An, now in five pieces and with most of its hieroglyphs effaced, 71 feet and 5 inches in height.

Flaminian Obelisk, on the Piazza del Popolo, erected by Seti I. at An, now in several pieces, 78½ feet in height.

Mahutean Obelisk, before the Pantheon, erected by

* D'Avennes, *op. cit.*, I., last plate.

Rameses II. at An, with its lower part broken off, and now 20 feet in height.



WESTERN OBELISK, LUXOR.

Vatican Obelisk, on the Piazza di San Pietro, once erected at An, perhaps by Menephthah I., the largest *entire* obelisk out of Egypt, 83 feet and $1\frac{1}{4}$ inches in height.

Sta. Maria Maggiore Obelisk, probably erected originally at An, without inscriptions, 48 feet and 5 inches in height.

Monte Cavallo Obelisk, before the Quirinal, once probably erected at An, without inscriptions, 45 feet in height.

To the above, some authorities also add :

Lateran Obelisk, in front of Church of San Giovanni in Laterano, perhaps erected originally at An, by Thothmes IV., broken in two and re-cemented, the loftiest of all erect obelisks, 105½ feet in height.

Besides these, there are elsewhere, of the same glorious company :

Atmeidan Obelisk, in Constantinople, erected by Thothmes III. at An, the lower part broken off, and now 55 feet and 4 inches in height.

Boboli Gardens Obelisk, in Florence, Italy, erected probably by Rameses II. at An, 16 feet and 1 inch in height.

Alexandrian Obelisk, in London, erected by Thothmeses III. at An, as companion to the New York Obelisk, with hieroglyphs largely obliterated on three sides, 68 feet and 5½ inches in height.

Cleopatra's Needle, in New York, erected by Thothmeses III. at An, with hieroglyphs badly defaced or obliterated around the bottom and up two sides, 69½ feet in height; By its original granite pedestal and limestone base, the height of this monument is increased to nearly 80 feet above the pavement.

A significant fact is found in the fractures, defacement and mutilation shown in nearly all the obelisks which

once stood at An, in comparison with the general preservation or perfection of those at Thebes.

It is but the story of our New York Obelisk that we can now briefly review: as you will see, a record of repeated misfortunes, in the shifting changes of Egyptian—but, we will hope, not of American—politics. Again and again it has been threatened with, and just escaped, the destruction which overwhelmed its companions. But its last, its recent calamity, was the most dangerous of all.

10. *Conveyance of Obelisk from Syené.* With several others (probably three) this monolith was hewn out at Syené in the Eighteenth dynasty, the most glorious period of Egyptian history. Thence the sprightly company of youthful obelisks started on their journey down the Nile valley, for almost 600 miles, to the city of An. As to the mode of conveyance of such huge masses of stone, there is some uncertainty, no picture nor inscription having been found with any direct bearing on this subject. The fitness of the Nile as the medium of transportation is at once suggested; but of this there is no record. The position of all the great obelisks on the same side of the Nile, the eastern, as that on which the quarries stand, is but a proof, in the opinion of some authors, of the ancient necessity of conveyance of these heavy masses by land, rather than of any choice from a religious point of view.* The only picture extant, having any bearing on the matter, is that from the tomb in El Bersheh, which represents a colossal statue dragged along upon a sledge by main strength, with the labor of several hundred men, while

* Stuart, *Nile Gleanings*, 213.

a few in front pour a liquid over the road-bed, possibly oil, more probably water, to dampen the chafing ropes * or to harden the sand and facilitate the dragging.†

In the approach to the quarries of Syené from the north, Denon states: "In the afternoon I found, in the middle of the desert, the trace of a grand antique road, bordered with large masses of cut stone, which led in a straight line to Syené." ‡

An ancient historian also records§ that, in one case, it required the labor of a couple of thousand men, three years, to transport a huge monolithic chamber to Sais in the Delta. You recall also the tale of Pliny, how an early King, Rhamsesis (probably Rameses II.) brought down an obelisk to the city of *An*, by the exertions of 120,000 men, and then bound his own son to the summit of the shaft, during its erection, so that the officials might not neglect any care. The first instance of the removal of Egyptian obelisks to a foreign land occurred 664 B. C., when Assurbanipal, with his Assyrian hosts, ravaged Thebes and carried two obelisks to his palace at Nineveh, evidently as far as the Red Sea overland; these were ultimately destroyed, with Nineveh itself, by the Medes, 606 B.C. |

But, in addition to this method, it is highly probable that the Egyptians were accustomed to float obelisks, colossi and huge blocks down the Nile in barges or rafts, during its inundations. It is recorded that they had vessels sometimes 120 feet in length, and others are re-

* Parker, *op. cit.*, Thos. L. Donaldson, 35.

† Compare Champollion-le-Jeune, *op. cit.*, IV., Plate ccclxxxix.

‡ Travels, II., 68.

§ Herodotus, II., 175.

| Records of the Past, VI. Cooper, *op. cit.*, 18.

ported of 420 feet. Under the Sixth dynasty, Una, a governor, thus describes his conveyance of stones for a pyramid: "I made first a boat of burthen, 60 cubits long and 30 cubits broad," 110 by 55 feet; "as soon as the water rose, I loaded the rafts with immense pieces of granite for the pyramid." *

The Chief Architect under Amenhotep VI. states concerning the transport of colossal statues of that King: "I caused eight rafts to be built; the statues were carried on the river."

Much later, 380 B.C., according to Pliny,† Nectan-ebo, of the Thirtieth dynasty, cut out an obelisk from the quarry, 80 cubits long (140 feet), which Ptolemy Philadelphus afterward floated on a raft down the Nile and through a canal, and erected in the Arsinoite Nome, near Alexandria.‡

But I think that I have found other circumstantial evidence to the same effect, in the records of the Eighteenth dynasty. The inscription § (quoted in full beyond) on one of the obelisks of Queen Hatasu at Karnak states :

"Her Majesty began the work in the fifteenth year of her reign, the first day of the month Mechir, of the sixteenth year, and finished it on the last day of the month Mesore, making seven months from its commencement in the quarry." On this Cooper remarks, "the month Mechir began about 17th December, and Mesore about the 15th of June," and there he stops. But it happens that on the 17th of June falls the "night of the

* Brugsch. *op. cit.*, I., 425.

† Nat. Hist., bk. xxxvi, ch. 14.

‡ Kenrick, *op. cit.*, II., 503. Parker, *op. cit.*, 21.

§ Cooper, *op. cit.*, 32.

drop," Leila-en-mekta, as the Arabs still call it at Cairo, the momentous night when, according to a dainty conceit of the ancient Egyptians, the mother goddess, Isis, ever lamenting for her slain husband (Osiris), let fall "the divine tear," somewhere upon the upper Nile—and the Nile began to rise! Certain it is that the rise of the eagerly watched sacred river, hardly perceptible at the beginning of June, suddenly every year becomes strongly marked between June 15th and June 20th. So the rush of the work upon the Queen's obelisks to their completion upon exactly that date hardly looks as a mere coincidence, but rather as a sign of carefully planned dispatch, that the obelisks might be ready for the rise of the river, and therefore that their transport was to be effected by floating down the stream. As Queen Hatasu was the sister, the predecessor on the throne, and, for a time, the co-regent of Thothmeses III., an equally energetic monarch, it is probable that his obelisks also—*i. e.*, at least, the New York, London and Constantinople obelisks—were both fashioned and conveyed to the Delta in a very short time, probably therefore on the bosom of the Nile.

We have next to consider certain rulers of Egypt, whose history, with long intervening intervals, is more or less blended with that of our Obelisk, and, in part, inscribed upon its faces. Of these there are five, so that our monolith might well be styled the *Obelisk of the Five Kings*.

11. *The Kingly Builder, Thothmeses III.* Our Obelisk was brought down to An at the command of the Pharaoh Dehuti-mes III. (in Greek, Thothmes, or Thothmeses), and in the early part of his reign, about

the year 1585 B.C. This great and warlike monarch has been styled the Alexander the Great of Egyptian history, the empire, during his reign, having been extended over the whole known world. At the same time, he was one of the great scholars of his kingdom. His very name, Thothmeses, signified "offspring of Thoth," the god of learning and sciences; in the library of the palace at Amada, he is pictured, standing before Sefekh, the goddess of writings and history. During his active life, he erected many temples and palaces, adorned with obelisks, at An and Memphis and Thebes. The portrait of the Royal Builder of our Obelisk was therefore of as much interest to his subjects as to us, constantly represented by brush of painter and tool of sculptor. He received the epithet, Mai-Re, Beloved of the Sun. His name was held in such high veneration that it is found inscribed on large numbers of scarabs and amulets, and on one he is represented worshipping the Sun-Ray, the Obelisk.*

Any object bearing his name, it was positively known, would bring great good luck to the possessor. So mote it be to our fair city of New York! For down the centre of each face of our Obelisk, nearly 3,500 years ago, the King had written, with the usual modesty of kings, his title and his great name, and there they are to this day! During fifty-four years, this mighty monarch, Thothmeses III., ruled over Egypt, and, at his death, was entombed with royal honors, in the Valley of the Kings, near Thebes, for his long sleep, to wait for the call of Osiris. But neither for the body of the King, nor for the obelisks he planted in An, was there to be

* Parker, *op. cit.*

rest. As the obelisks, at a later period, were carried away to another site, at Alexandria, so there came rude disturbance to the sleeping King. In some time of invasion or danger, the faithful Theban priests came to the valley by night, lifted all the coffins of kings and princes out of their stone sarcophagi, bore them over the hills to a wild gorge, Deir-El-Bahari, and there, in the darkness, piled them up hastily in a cavern they had secretly excavated, and covered up its stone portal under a vast heap of sand. The position of this mass of sand, lying so far up on the hillside, excited the suspicion of a wandering Arab in 1879. It is a strange coincidence that, just at the time, in 1880 and 1881, when the Obelisk of Thothmeses was again overturned, to be carried from Egypt over the ocean to New York, the King's resting place was rediscovered and again violated, and the mummy of the Kingly Builder of our Obelisk was for the third time borne away and deposited in the Museum at Cairo. By its side, wrapped tightly in swaddling bands, the paddle was seen, wherewith, in Paradise, the risen Thothmeses might guide his boat over the Sea of Joy. And the mummy was unrolled, and the King's face uncovered, and his right hand, clasping, over the hollow where his heart had been, the King's greatest treasure, not a crown-jewel but a stone scarab, emblem of his hope of resurrection and immortality. Even of that emblem, it was found, he had been already robbed by some Arab, through an opening cleft through the mummy. There was but just time to take a hasty and imperfect photograph, and then, before the bystanders and to the dismay and despair of the Director of the Museum, "the features

crumbled to pieces and vanished like an apparition, and so passed away from human view forever." Yet a wreath of flowers which had been wound around the body by loving hands, before the burial, was found so wonderfully preserved, that even their colors could be distinguished, and they looked as if only recently dried; while a wasp, which, tempted by the flowers, had flown into the coffin before it was closed, thirty-five centuries ago, was found dried up but still perfect, having lasted better than the King.* And this was the last of Earth to Thothmeses.

12. *The Architect of our Obelisk.* Another question of interest is, who was the architect that planned and supervised the erection of our Obelisk? The names are on record of a large number, at least forty, of the great architects of that wonderful land. The glory of Egypt was her architecture, and, as historians recount her architects were held in royal honor. Nearly all were married to daughters or granddaughters of the reigning Pharaoh. One family of successive architects has been studied, reaching from the reign of Seti I. to that of Darius, from father to son for twenty-two generations.† Statues were often erected in their honor, such as that of the great architect of Memphis, Ra-Ner, which was dug up near Cairo.

We fortunately know at least the name of the illustrious architect who erected, at the city of An, the temples and palaces of Thothmeses III., with their decorations, doubtless including our own New York Obelisk.

* Stuart, *Fun. Tent.* 4 and 135.

† Brugsch, *op. cit.*, I.

His offices and titles are thus styled, in an inscription of that day :

“The hereditary Lord and First Governor in Memphis, the true author of the arranging of the temple-feast, the Architect in the town of the Sun, the Chief Superintendent of all the offices in Upper and Lower Egypt, the Head Architect of the King, the Chief Field-officer of the Lord of the Land, the Steward of the King's palace of Thothmeses III.—Amen-men-ant.”

To the names then of Upjohn, Renwick, Hunt, Smith, Bartholdi and others most worthy of honor for the best architecture and decoration of New York, let us add the name of Amen-men-ant, the Architect of our Obelisk.

13. *The City of the Sun.* In Lower Egypt, at the upper end of the Delta, rose the little city of An, or Heliopolis as the Greeks called it, the City of the Sun, bristling with obelisks. “It stood upon a lofty plateau of rocks and sand, surrounded by deep canals and broad lakes, bordered by papyrus meadows and sycamore groves.” The outer line of the present mounds has been traced out by the traveller, Pococke.

In approaching the front of the Temple of the Sun from the northwest, the pilgrim first passed between the most ancient pair of obelisks, erected by Osertasen I. of the Twelfth dynasty, about 2300 B.C. One of these was overturned by the Arabs, 1160 A.D., in search of hidden treasure, and the other still stands erect, the famed Obelisk of An, the oldest erect obelisk in Egypt. Then passing through the huge Pylon, the way lay through a long avenue of marble sphinxes

(some of which still remained at the visit of Pococke in 1743). Beyond rose four obelisks, immediately before the face of the temple. In the first pair, the one on the left, the north-eastern, was the one now in New York ; the other, on the right, was the one now in London. In the second pair, was the one now standing in Constantinople, and the fate of the other is unknown.

To the Temple within, as the pilgrim was informed, the wonderful Bird of the Sun, with plumage of red and gold, the Ben-nu or Phoenix, came flying from Arabia, once in five hundred years ; according to one tradition,* it bore a great ball of myrrh, with the body of its father enclosed, for burial ; according to another, it flung itself into the altar-flame, was consumed, and rose again from its ashes—a consolatory type of the imperishability of all force and life and bloom. Around and about rose obelisks in wonderful number, some of them, according to report, a hundred and eighty feet in height, a Temple and City of Obelisks, as they called it, An-nu. So many of these remained even down to the visit of Abd-el-Latif, in 1203 A.D., that he refers to them as “an innumerable multitude.”† With the exception of a temple at Memphis, this was the most ancient of all Egypt—of antiquity so great that no chronicle existed even then of its first erection. The men who set up our Obelisk at An in the days of Thothmeses, nearly 3500 years ago, looked around, with the same reverence as we now gaze upon our own surviving monument, on the hoary walls of the Temple itself, and

* Herodotus, *Euterpe*, II., 73.

† Pinkerton, *op. cit.*, XV., 807.

on the still more venerable shaft, the great obelisk of An and its fellow, set up on the rebuilding of the Temple, over 700 years before.

The slender, pointed shafts of the countless obelisks, blazing with gold, rose glittering into the bright clear air of the Egyptian Delta, before the thronging multitudes of worshippers, almost blending, before their admiring eyes, with the keen though kindly rays of the all-conquering Ra, the Sun-Force, the symbol of the warming, vivifying, re-creative power of Nature.

If this town was the actual birthplace of Thothmeses III. (as suggested by the statement on the west face of our Obelisk), very naturally he "embellished the house where he was born." So here, in the early part of his reign, probably between 1590 and 1580 B.C., amid the joyful din of the great Thirty Year Festival (as recorded on the south face), our Obelisk and its fellow were upraised before the taller pair, in front of the Temple of the Sun, thirty-five centuries ago.

It found itself surrounded by the far-famed seat and origin of the profound learning of Egypt, the holy fane to which pilgrims thronged from all the world to seek wisdom. The city was small, about three-quarters of a mile square, and every visitor must have passed almost under the shadow of our Obelisk.

Whatever in later days has inspired mankind, through the spirit and influence of a great world-university, such as that at Alexandria, Leyden, Salamanca, Heidelberg, and Oxford, was here concentrated in the Temple of Ra, with its 13,000 priests chanting before the huge mirror of burnished gold, the sacred hawk in the golden cage, the awful death-emblem, the pyramidal *ben-ben*, in its secret

chamber, and the sacred calf, Mnevis, on its purple bed. The anxious care, which this earliest of the nations gave to the education of woman, was shown in the convent school near by for the Ahi-t, young women of families of the priests ; from its doors came the wedding procession of Asenath, the daughter of the High Priest, Poti-pher-Ra, on her way to the house of Joseph, the Hebrew Prime Minister of an early king.

At a later day, among the priests, there was one, afterward the Hebrew law-giver, Moses, who here received his education, and (according to Hecatæus, Strabo and Manetho) finally stood before the Sun-god as a priest. As he went in and out through the great portal of the Temple, he daily passed between a pair of obelisks, his robe probably at times brushing against the base of the eastern one, which now stands in our Park.

This city of An, too, we may venture to say, was one of the few places of early antiquity where at times might be gathered an assemblage of geographers ; for the keen-witted Egyptian, though home-loving, was eager for knowledge concerning the wide world outside of the Land of Chem. Salt water, indeed, was to him an abomination and defilement, since it was the abode of evil spirits. So it was not until the time of the predecessor of Thothmeses III., his sister, the energetic and clever Queen Hatasu, of Amara, that Egypt had a fleet, the conscientious scruples of her warriors having been removed, before they embarked, by manning her vessels with Phœnician sailors. Egypt also continued in constant connection with foreign geography through the overland caravans, as well as through the enterprise of the Phœnician voyagers themselves, who were

glad to bring to her spices from the Land of Punt, tin from Cornwall, corundum from the Island of Sapphire, and all other needed commodities from distant shores, at the very lowest market prices.

But the city of An was ever the particular goal of the foreign traveller. Among these students of the olden time, in humble attendance at the schools of the Temple of the Sun, were Pythagoras, Thales, the Grecian law-giver, Solon, the historian of Egypt, Manetho, and that great traveller, whom we call the Father of History, Herodotus. Here, later, came the geographer Strabo, to whom they pointed out the house in which, three centuries and a half before, Plato had spent three years under the instruction of the Egyptian priests, with Eudoxus, the astronomer, as his fellow-student. Memories of war, too, cluster around our monolith during its stay at An. It looked down upon the hosts of Shishak, marching northward past the walls to the destruction of Jerusalem, and three centuries later on the glorious array of Alexander the Great on his conquering march through the Land of Goshen.

We may well congratulate ourselves on the possession of a monument whose history has been so intimately linked, through these precious associations, with the City of the Sun, over which, at the time of his rebuilding of the sanctuary, Amenemha I. breathed the pathetic prayer (now recorded on the ancient leathern roll in the Museum at Berlin):*

May it not perish by the vicissitudes of time.

May that which is made endure.

But through the desolations of war and of treasure-

* Ebers, *op. cit.*, I., 187

hunting, and the devastations produced by the building of Cairo, five miles to the southwest, there remains now, on the site of the famous city, near the little Arab village of Mataria, the ancient obelisk of An as the only vestige, with a few rude mounds, ruined heaps of mud from the walls of a later Coptic town, the old spring of the Sun, and a venerable tree, the traditional resting-place, at a later time, of two Jewish fugitives and a little Child.

In the ancient time, however, at the period of the greatest glory of An, here stood our Obelisk for about 1055 years—a happy millennium, soon to be followed by disaster after disaster.

14. *The Second King, Rameses II.* In the Nineteenth dynasty, probably 200 years after (about 1385 B.C.), the illustrious Pharaoh, Rameses II., steps out on the field of Egyptian action. This is the second of the monarchs whose names are connected with our Obelisk.

This warrior-king led out his armies in every direction, and struck fierce blows at all the surrounding nations, who successively yielded to his sway. Among these, haughty Persia, overcome and ravaged by the armies of Egypt, trembled, but bided her time. Then Rameses, in the pride of his manhood, inscribed his name and glory, in double columns of hieroglyphs, on every one of the faces of our Obelisk, and reigned in peace. The long wars were ended, and the warriors rested and the priests sang, and the people rejoiced around our Obelisk within An. But from outside its walls came a minor tone, the sad refrain of the black-bearded captives from the land of Canaan in the brick fields. These are pictured at work on the walls of a

tomb of that period; their hard labor is done under the eye of the Egyptian task-master, who squats near by, with an inscription, "the stick is in my hand, be not idle!"

The great king Rameses died, after a long reign of sixty-seven years, and was buried in the Valley of the Kings. On the strange discovery of his coffin also, in 1881, among the others in the wild Libyan gorge, the royal mummy was taken to the museum at Cairo, unrolled, and the face of the monarch revealed, in his old age. Under the next reign, that of Meneph-tah I., the captives escaped from the brick fields and out of the city of An to Canaan, where they found a protector in Cyrus, the king of long humbled Persia.

15. *The Third King, Osarkon I* Once more there is a record on our Obelisk, in the decline of the Egyptian monarchy, 400 years after Rameses II. Then came Osarkon I., 933 B.C., in the Twenty-second dynasty, a monarch probably of Assyrian origin. Of him it is said,* "There is every reason to believe that he was a peaceful and wholly undistinguished prince, content to add a few sculptures to the Bubastite portico of his father, and to rule Egypt in quietness during such term of life as Heaven might allow him. His portrait is that of a mild prince, not remarkable for energy or determination."

This gentle Pharaoh, greedy too after everlasting fame in Central Park, narrowly inspected our Obelisk and found two little spots vacant near the lower part of each face, and there he too inscribed his modest tale of virtue.

* Rawlinson. *Hist. Anc. Eg.*, I., 425.

16. *The Fourth King, Ra-mesuth.* Four centuries after this, the opportunity presented itself to Persia, ever mindful of her past humiliation at the hands of Rameses, to wreak her long delayed vengeance.

In the sixth century B.C., the white sails of the Phœnician fleet suddenly glistened off the curved coast of Aigab-t, around the mouths of the Nile, as allies of Persia; swept the navy of Egypt from the Mediterranean, and came sailing up the sacred river. From the north a vast Persian host invaded Egypt, and defeated the forces of Psametik III., after a fierce battle near Pelusium, in which 50,000 Egyptians and 20,000 Persians fell. Thus the savage Persian leader, Cambyses (or Kemba-thet) reigned as king of Egypt, assuming the throne-name of Ra-mesuth. Later in his reign, maddened by failure of an expedition and by suspicion of his subjects, he insulted and stabbed the embalmed body of an Egyptian predecessor, Amasis; scoffed at the god Pthah of Memphis, destroyed his images, and stabbed the sacred bull. Then marching his army through the Delta, he desolated the land with fire and sword, taking the city of An by storm, and the flames of the ancient Sun-Temple rose to the sky. The obelisks he hurled down, or mutilated, using fire and violence (as Strabo sorrowfully recounts), above all, we may be sure, on the *first pair* of Obelisks in front of the Temple, on which the hated cartouches of Thothmeses III. and of Rameses II. were incised. There was in the city (it is reported by Pliny), one magnificent obelisk, 11 cubits in breadth and 120 cubits in height (more than thrice that of our own), to whose foot the conflagration had reached, when the anger of the Persian

King gave way to admiration, and he bade his warriors extinguish the fire. So passed away the glory of An, about the year 520 B.C., and Alexandria gradually took her place as the world's centre of learning.

And there among the ruins, burned and blackened—possibly overthrown and prostrate, as some think—remained that first pair of obelisks, our own and its fellow, for over five centuries, with no new inscription but the fire-mark of the last King Ra-mesuth.

17. *The Fifth King, Augustus.* The recorded history of our Obelisk and of its mate now in London, thus traced for nearly sixteen hundred years, now approaches our era, when Egypt became a part of the Roman Empire. In the year 12 B.C., the eighteenth of the reign of Augustus Cæsar at Rome, these obelisks were both carried by the Romans from An to Alexandria on the sea-coast, and raised once more in front of the grand water-entrance of the Cæsareum (or Sebasteum), the great temple erected to commemorate the conquests of the Roman armies. For some reason, now unknown, the name "Cleopatra's Needle," even down to a recent day, has been attached to our own Obelisk while at Alexandria. It is certain that she had died eight years before the removal of the obelisks from An, but it is possible that the plan of their removal may have originated with her. It also appears that there were other monuments or public works in Alexandria with which her name was formerly connected. In regard to one of these, called, in 1743, the Calisch or Canal of Cleopatra, Norden remarked: "The name of Cleopatra, which it retains to this day, gives no ground for assumption as to the time of its original construction.

Some work of repair, carried out at command of a queen of such celebrity, some amusement in which she may have taken part in that locality, or some festival which she may have there displayed, could easily have given occasion to this name."* The same explanation is applicable to the long current name of the Needle at Alexandria.

In the re-erection of the two obelisks, on their arrival from An, the Romans found the lower angles of both shafts badly broken away, and inserted four huge bronze crabs, about sixteen inches in diameter, under each shaft for support. This gave opportunity for another series of inscriptions on the crabs themselves. These record, in Greek and in Latin, the names of the emperor, prefect and architect, by whom the re-erection of the obelisks has been effected. Fragments of two of the ancient crabs are preserved in the Metropolitan Museum of Art, in this city, the original four having been replaced under our monolith by new castings of the same form, size and inscriptions.

At Alexandria, the two monuments remained through the exciting scenes of the revolt of the heathen in 366 A.D., in which the Cæsareum and neighboring temples were burned; through the capture by the Persians in 616 A.D.; through the siege and sack of the city by the Saracens in 640 and 646 A.D.; and through later captures in 823, 924 and 928 A.D. In 1203 A.D., both obelisks were seen standing by the Arab physician, Abd-el-Latif. In 1301, and again in 1303 A.D., violent earthquakes occurred, by one of which its companion was probably overthrown, while our own stout monolith

* Norden, *op. cit.*, 19.

firmly held its place. After that date there are occasional records in the hasty visits of foreign travellers, and futile attempts were made to unravel the mysteries of its hieroglyphics.

One old traveller's note in 1610 A.D. reads thus:

"Of Antiquities there are few remainders: onely an Hieroglyphicall Obelisk of *Theban* marble, as hard well-nigh as *Porphyry*, but of a deeper red, and speckled alike, called *Pharos Needle*, standing where once stood the palace of *Alexander*: and another lying by, and like it, halfe buried in rubbidge."*

And another account in 1738:

"To-day there are only two solitary obelisks, of which one still stands in its ancient position, but the other is broken and almost buried in the ruins."†

To recapitulate its history thus far:

Our Obelisk was quarried about 3470 years ago at Syené, and borne to the City of An, and there stood for 1055 years.

About 520 B.C., burned and defaced by Cambyses, it remained over 500 years longer among the ruins of the city.

In 12 B.C., carried by the Romans to Alexandria, and there set up, it stood for 1890 years, down to 1879.

For at least 165 years previous to that date, the lower portion of the shaft and the entire pedestal and foundation had been buried in the sand up to the height of about twelve feet on the shaft, as reported by the traveller, Paul Lucas, who very likely chanced to tell the truth, when he visited Alexandria in 1714 A.D. It

* Sandys, *op. cit.*

† Norden, *op. cit.*, I., Introduction.

is not generally known that when, on the defeat of Napoleon, in 1801, the Viceroy of Egypt presented



OBELISK AT ALEXANDRIA, IN 1738.

the fallen obelisk at Alexandria to England, he afterwards gave the standing one (now in New York) to France. The French were several times at the point of its removal to Paris, but found fault with its marred

hieroglyphics. Led by their love for artistic perfection, they accepted the advice, in 1829, of Champollion the Younger, and, in 1836, took the beautiful eastern obelisk from Luxor in its place. Fortunately for us, for the loss by the marring of the Alexandrian monolith, however great, at the hand of time and violence, is far more than offset by the historic interest we possess, in the very scars of this veteran shaft of the ancient City of An.

18. *The Rescue by the Republic.* In its latter days at Alexandria, the monolith was fast approaching destruction through the climate, absence of protection from mutilation, and encroachments of the sea in the subsidence of the coast. Its threatening fate impressed a distinguished archæologist, who wrote :

"The venerable monument, in its sordid surroundings, aroused no sentimental feelings ; and it was only when it was seen from the sea that it had some picturesque charm or reminded us of the past greatness of the Greek city." *

Gorringe has reminded us of the neglect with which the Obelisk was treated in the suburb of that city and "the feeling of disgust aroused by some of its surroundings. No one deemed it worthy of protection and care, even to the extent of preventing its defacement and the accumulation of offal around it. Two men made a business of breaking pieces from the angle of the shaft and edges of the intaglios, for sale to relic hunters. The disagreeable odors and clamors for backsheesh hastened the departure of strangers, who rarely devoted more than a few seconds to its examination. The con-

* Ebers, *op. cit.*, I., 23.

stant washings of the surf had begun to affect the foundation, and, for the last fifteen years, the Obelisk had been gradually inclining more and more toward the sea. In a few years it must have fallen, and almost certainly been broken by the fall. But a more ignoble fate threatened it, in the proposition of some of the foreign residents of Alexandria to erect an apartment house on the adjacent ground, around the Obelisk, which was to adorn the courtyard." * This should suffice in reply to the question, sometimes asked, whether our Obelisk should not have been left to stand in its native land. In 1877, the first active effort to acquire the Obelisk for this country was made by Mr. William Henry Hurlbert, at that time editor of the *New York World*. It is fair to add that, ever since, the Obelisk has found, in the Press of New York, its most watchful and efficient defender in time of need. Through a single conversation with Mr. Hurlbert, a generous and public-spirited citizen, the late Mr. Wm. H. Vanderbilt, became interested in the matter, and undertook to defray all the expenses required to transport the Obelisk to New York, and to re-erect it at the chosen site in Central Park. These expenses much exceeded the original estimate, and ultimately amounted to the sum of \$102,576. The transport of the Luxor Obelisk to Paris cost the French Government nearly \$500,000. At the instance of Mr. Henry G. Stebbins, at that time a Park Commissioner, and of Secretary of State William M. Evarts, the assistance of our Consul General at Alexandria, Mr. E. E. Farman, was invoked. In 1879, the Egyptian Government, through the Khédive, Ismail, and

* Gorringe, *op. cit.*, 1.

his successor, Tewfik, consented to the presentation of the Obelisk, as a free gift, to the City of New York. In order to carry out the conveyance to New York, the services of the late Lieut. Commander Henry H. Gorringe of the United States Navy were secured. Through his skill as a diplomat, an engineer and a navigator, as well as his courage as a man in face of the opposition of the foreign residents and subordinate officials at Alexandria, the Obelisk was successfully taken down, embarked and conveyed to this city. With reasonable pride, Gorringe reminds us that "the French waited about twenty-five years, and the English nearly seventy-five years before removing the obelisks they had selected. There was a feeling in Egypt that the Americans would certainly require a century to perfect their arrangements." The total period from the acquisition and taking down of our Obelisk to its re-erection in Central Park, inclusive, was less than fourteen months!

The series of steps in this transfer have been described in full detail, in the work of Gorringe. From the bottom of the shaft and pedestal the sand was dug away. A staging was first erected, and the entire shaft and pyramidion sheathed with heavy plank, after the removal of the staging. The column was then supported upon steel towers and enormous trunnions, gradually turned and lowered, finally launched in a caisson, towed to Alexandria, raised in a floating dock, and embarked in the steamer "Dessoug," through a hole in its bow. After a voyage of thirty-seven days with a picked-up crew and rough officers, whom Gorringe describes as well fitted for a pirate, the

pedestal was landed at West 56th Street, New York ; but the shaft was disembarked at Staten Island upon pontoons, towed to the foot of West 96th Street, and there landed. Thence it was slowly dragged around the north end of Central Park, down Fifth Avenue, and on a trestle work at 82d Street, over to the knoll in the Park ; once more raised and turned upon the heavy trunnions ; lowered into its place, and at last successfully re-erected on its present site. It should be added that this alone, of all obelisks removed from Egypt, now stands on its original granite pedestal, and, beneath this, the original base of three tiers of lime stone slabs.

The Obelisk was thus finally raised, as we hope, for all time, on January 22, 1881. It had hardly settled into its place and the grounds around it been rearranged, when, only five months after, his life-work done, at the age of forty-four, Goringe died. From photographs kindly made for me by Mr. Harry G. Caffall, of this city, I have already shown a view of the monolith obelisk which has been raised, as a memorial over the grave of Goringe, in Rockland Cemetery, near Piermont, N. Y.; and I am glad to exhibit, what Commander Goringe was too modest to include in the illustrations of his fine monograph on Egyptian Obelisks, his portrait, from the bronze medallion on the same monument. Born in Barbadoes, his life offers another example, like that of Alexander Hamilton, of the debt which New York owes to the energy of adopted sons of West India origin. As the inscription on his tomb records :

Brave, tender and true,
He passed away lamented by those who knew his worth,
Whose loving hands have raised this obelisk to his memory.

19. *The Hieroglyphic Proclamations.*—It will not be without bearing on our purpose, if we give attention to some of the hieroglyphs which cover the four faces of the Obelisk, and to which we owe our chief knowledge of its history and antiquity. These are well shown, though with some errors and imperfections, in the drawing made by Burton and Bonomi in 1827, while our monolith stood at Alexandria. Down the centre of each face of the shaft runs the self-laudatory inscription of the royal builder, Thothmeses III. In the column on each side you notice the modest remarks of Rameses II., two hundred years after. At the very base, the ascriptions of long life to the King—like the Hoch ! the Hurrah ! or the Vive l'Empereur ! of later days. Near the bottom, on each side, the little bare spots which Osarkon I., four hundred years after, covered with his glory in diminutive characters.

Exception has been sometimes taken to the somewhat magniloquent and self-assertive tone of Thothmeses and his successors in these inscriptions, as well as the absence of greatly desired information from so ancient a record. But it will interest you to glance for a moment at the vignette, from the dedication of Capt. Norden's work on Egypt to King Frederic V. of Denmark, a little over a century ago.* In this the King stands enthroned as a god, with the obelisk bowed down before him, the pyramid withdrawn to the rear, the Sphinx aghast with admiration, the globe at his feet, and the President of the Royal Academy of Sciences of Copenhagen kneeling in humble submission.

20. *The Brilliant Gilded Cap.* We have next to con-

* Norden, *op cit.*, I.

the south side of the New York Obelisk, there is good authority * to show that those in the central column inform us :

“ Thothmes III. has made this to be his monument, in honor of his Father Tum [*i. e.*, the Setting Sun], the Lord of An, and . . . has set up for him two large obelisks [note their sign in the middle of the face], the pyramidion being covered with gold metal,” etc.; *i. e.*, on this emblem of the sunbeam, the point or apex of the pyramidion was surmounted by a cap of gold or gilded bronze, which would glitter at the first touch of Ra, the morning light, and at eve send back the last gleam of Tum, the Setting Sun.

The careful archæologist, Ebers, believes that the hieroglyphs on our Obelisk were themselves gilded. He states, “The hieroglyphs engraved in the granite, to perpetuate the glory of his name, were inlaid with silver gilt, and its point was capped with the same metal. It was dedicated to the Sun-God, Ra, and formerly the beams of the day-star were mirrored in the polished surface of the granite and gold.” To this, he adds the footnote : “The expression on the Obelisk itself, *tasm* or *uasm*, appears to mean gilded ; for the word does not appear in any lists of metals, nor does it enter into the computations of metals, or lists recording the weight of different kinds of gold.”† Moldenke translates the same word, *usem*, as gold metal, with the note : “The gold metal mentioned here may have been only an alloy of copper and gold. Some think that it was the *electrum* of the ancients, which was an alloy of silver and gold.”

* Moldenke, *op. cit.*, 76.

† Ebers, *op. cit.*, I., 23.

Elsewhere he states : " The stone was polished to a high state of perfection, and the inscriptions added in intaglio-relievo by skilled stone-cutters, under the direction of scribes. Whether the figures of these inscriptions were filled out with copper or gold, as some maintain, is extremely doubtful. With the pyramidion, it was different. While its usual dedicatory inscriptions remained undoubtedly as they were chiselled, the point or apex seems to have been surmounted by gold or gilded bronze. . . . It would appear, from extant obelisks, that, in order to have the gold added, the stone apex was not brought out to a fine point, but left rugged and incomplete." *

Exactly the same testimony is borne by the inscriptions on the obelisks at London, Paris, and Rome. The archæologists of London and Paris have repeatedly expressed strong protest † against the omitted replacement of the ancient gilding upon the two monoliths in those cities, which now, gray, dull and forlorn, present but a dismal caricature of their ancient glory.

On this deplorable effect, a French traveller in Egypt remarks :

" The Luxor Obelisk, after so many centuries of antiquity, is now as young, as brilliant as the day when the hand of Sesostris placed it upon its pedestal. Its stone has the same tints of a pale rose color ; and under the floods of light which this fiery sky pours down upon it, one would suppose it to have but yesterday arrived from the bosom of the quarry of Syené. I confess that I could not avoid some comparison, since that time, when

* Moldenke, *op. cit.*, 18 and 59.

† Perrot et Chipiez, *op. cit.*, I., 621, etc.; Cooper, *op. cit.*, 85, etc.

once more I looked upon its twin brother, transferred to the midst of the fogs of the Seine, dyed by the rain to a grayish tint which made it resemble the Fontainebleau sandstone, bleached, discolored and already disintegrating, under the influence of a foggy and inhospitable sky."*

The inscriptions on the pedestal of the Paris Obelisk, in the Place de la Concorde, are gilded, and M. J. J. Hittorf, the designer of the pedestal, offered a strong argument in favor of putting a bronze cap, possibly gilded, upon the pyramidion of that monument.

Other authorities state, of the same obelisk, "the apex is left unfinished, and still seems to demand, in the damp air of Europe, the protection of its former gilded cap,"† and "it appears belittled by its erection as a solitary monolith, in the Place de la Concorde, and without its former gilding."‡

On the London Obelisk, the former companion of our own at An, in the central column, on the first (east) side §, Thothmeses announces :

"He made [this] in his monuments to his father *Hor-em-mak-khou*. He erected two very great obelisks, capped with gold (when he celebrated) the panegyry of his Father, who loves him. He did (it), the son of the Sun, Thothmeses, the best of existences, Beloved of *Hor-em-makh-khou*." |

The sign of the pair of obelisks, above referred to, is distinctly preserved both on the second and fourth faces of this obelisk, and is well shown by Champollion-le-Jeune in Plates cccxlv. and cccxlv. (*op. cit.*). This testimony from the London monument is equally con-

* Poitou, *op. cit.*, 275.

† Cooper *op. cit.*, 85.

‡ Perrot et Chipiez. *op. cit.*, 621.

§ Cooper, *op. cit.*, 134.

| Parker, *op. cit.*, T. L. Donaldson, 29, and S. Birch, 43.

clusive in regard to its New York consort, particularly in view of the results of Dr. Moldenke's study of the characters on its south face.

For other evidence in the same direction we may return to the very tip of the pyramidion of our own monolith. It is not generally known, and no reference is made to the fact in Gorringer's book, that this apex was imperfect when the Needle stood at Alexandria. This is distinctly shown in all photographs up to 1879, in many of the drawings by travellers for a hundred and fifty years before, and in Plate ccccxliv. of Champollion-le-Jeune. Gorringer had this apparent defect repaired in 1880 by surmounting it with a new piece of granite about six inches in height. This is now the more plainly visible from below, as the cement with which it was attached has been unfortunately in part dissolved out by rains, and has run down and whitened the faces of the pyramidion below. It is, I think, more than a curious coincidence, that the pyramidion of the London obelisk is also truncated in the same way, as shown in the two plates of Champollion-le-Jeune, already mentioned. In regard to this it is stated: "The apex is roughly cut and damaged, it having been covered, like most of the obelisks of Thothmeses III., with a bronze cap." *

The same truncation and imperfection have been already noted by Champollion-le-Jeune on obelisks in the second court of the Palace at Karnak (Plate scccxii., cccxiii., and cccxiv.), and by all observers, in regard to the ancient obelisk at An, the Luxor obelisk and its fellow at Paris. In the case of these last two, a

* Cooper, *op. cit.*, 125.

shoulder around the base of the pyramidion renders certain, what may be equally true of the New York obelisk and the rest, that the shaft was originally left imperfect at the top, with the expectation that it would be perpetually covered by a metal cap. But it is also possible, in our own monolith and that of London, that, during its mutilation by the Persians at An, the glittering gilded tip may have been struck off, both metal and the stone beneath, as a piece of plunder.

Again, before the new tip was put on the pyramidion of our monolith, Gorringer found traces of ancient cement adhering to the faces below. He gathered a gram of this, to be chemically examined for traces of gold or copper, as he states,* "to determine whether or not the pyramidion had been gilded or covered with bronze." As only a mere trace of copper (0.04 per cent.) was found in these few particles of cement, he came to the conclusion that "there was no evidence of either gold or copper having been attached to it at a previous period." However, the very presence of that cement would seem to testify to the former attachment of some object to the pyramidion—plainly the gilded cap referred to in the inscription below.

There is another fact, observed in the figures carved upon the pyramidion, which may have similar bearing on our present subject. In the squares on two of the four faces, the Sun-god *Ra* is represented, and on the other two, the Sun-god *Tum*. It is strange that the head of *Ra* in both cases is now nearly effaced, while that of *Atum* is well preserved. Gorringer states: "It is barely possible that the head of *Ra* may have been

* Gorringer, *op. cit.*, Appendix, 159.

gilded, while that of *Atum* was only polished like the rest of the surfaces, and that this gilding may have been the cause of the obliteration." * However, if either was to be distinguished by gilding it would certainly have been *Atum*, to whom the Temple of the Sun was dedicated, at least during the XVIIIth dynasty; the effect of gilding could only have been toward protection against the sun and weather; and the effacement of the head of *Ra* may have been due to the hand of violence of some zealot of *Atum*, or of some marauder in the service of Cambyses.

Again, the exquisite and wonderful sharpness and perfection of a large part of the hieroglyphs on the four faces of the pyramidion, surfaces peculiarly exposed to weather erosion, may indicate former protection by direct gilding upon that part of the stone.

Another reason for the replacement of the gilded cap upon our Obelisk is the fact of the general, if not universal, Egyptian custom of decoration of their obelisks in their original condition, both by high polish of the stone, and by attachment of gold in the form of gilding to the entire surface of the pyramidion, or of a gilded cap of copper or bronze, or by filling the incised hieroglyphs over the entire monument with pure gold or gilded bronze, or by gilding the whole shaft (except the intaglios) from top to bottom. In the Hay Collection of Antiquities at Boston, Mass., there is now "a large fragment of well polished, red syenitic granite, having upon its surface the remains of gilding." † Some of the evidence on this point will be here presented.

* Gorringe *op. cit.*, 62 and 63, *note*.

† Cooper, *op. cit.*, 28, footnote.

As to the oldest erect obelisk, that of Osirtasen I. of the XIIth dynasty, now standing on the site of An, and its long buried companion, the Arab writer Kodhai refers to them both as "being extremely wonderful. On their summit are two pointed caps in copper," probably gilded bronze.* This obelisk is square, formed of a single block, pointed at the top, which is a covering of copper as yellow as gold, above which is the figure of a man sitting in his chair, looking at the rising sun. The companion was overturned by the Arabs in 1160 A.D., in search of treasure supposed to be buried beneath, of which exploit Mohammed, the son of Abdarrahim, discreetly remarks, "that one of the obelisks of Pharaoh, which were at Mataria, near Cairo, fell down, and a great quantity of copper was taken from the top."† The copper cap on the erect obelisk at An was still seen, in 1203 A.D., by the Arabic physician Abd-el-Latif, and by various other observers since.‡

The two obelisks of the temple of Luxor, in Thebes, were erected by Rameses II., and excel all others in artistic execution ; one still remains at Luxor, and the other was removed in 1836 to Paris. Mariette maintains that the summit of each was covered with a cap of gilded bronze,§ and this is confirmed by the rough execution of the pyramidion, and by a bevel below, intended to receive the edge of the cap. He also believes that the rough faces of the entire shaft were completely gilded, with the exception of the highly polished bot-

* Moldenke, *op. cit.*, 123.

† Parker, *op. cit.*, 29.

‡ Pinkerton, *op. cit.*, xv., 802 and 827.

§ Also Wilkinson, *Gen. View of Egypt*, 316.

toms of the hieroglyphs, which remained uncovered, retaining the natural color of the granite.

At Karnak are two obelisks of Queen Hatasu of the XVIIIth dynasty, the sister of Thothmeses III.; one is fallen and the other erect, the latter 97½ feet in height, the loftiest now standing in Egypt. Around the base runs an inscription :

“ The Queen, the pure gold of Monarchs,
Had dedicated to her father, Amen of Thebes,
Two obelisks of mahet stone (red granite),
Taken from the quarries of the south.
Their upper parts were ornamented with pure gold,
Taken from the chiefs of all nations.
Her Majesty gave two gilded obelisks to her father Amen,
That her name should remain permanent,
Always and forever in this Temple.
Each was made of a single stone of red mahet stone,
Without joint or rivet.
Her Majesty began the work
In the fifteenth year of her reign,
The first day of the month Mechir, of the sixteenth year,
And finished it on the last day of the month Mesore,
Making seven months from its commencement in the quarry.” *

In reference to this inscription, Mariette-Bey states :

“ 1. The summit of the obelisk was covered over with ‘pure gold taken from the chiefs of the nation.’ Unless this simply implies an apex overlaid with a casing of gilded copper, as the apex of the obelisk at Heliopolis must have been, this inscription possibly refers to the sphere (of gold?) which is represented on certain bas-reliefs at Sakkarah.

“ 2. The obelisk itself was no doubt gilded from top to bottom ; in examining closely, one may notice that the hieroglyphs were carefully polished, and moreover that the plain surface of this monument was left compara-

* Cooper, *op. cit.*, 32.

tively rugged; from which it may be inferred that the plain surface, having a coating of white stucco, the like of which may be seen on so many Egyptian monuments, alone received this costly embellishment of gilding, the hieroglyphs themselves retaining the original color and actual surface of the granite." *

There are also at Karnak two obelisks of Thothmes I., one fallen and broken, the other erect, 71 feet and 7 inches in height. Concerning the pyramidion of the latter, Cooper states: "The pyramidion at the apex, which is rather more acute than in the later examples, is also adorned with a votive vignette, and is the oldest illustration of that practice. Evidently, therefore, this obelisk was never designed for a metal covering, but it may have had its summit gilded for the better preservation of the sculpture upon it . . . for its highly polished surface would not prevent such an application of the precious metal."

On the walls of the Temple at Karnak, according to Wilkinson,† there is a representation of the dedication of an obelisk (probably the Lateran obelisk), in which this is described as "resplendent with gold." On this obelisk of St. John Lateran, now at Rome, by some authorities‡ considered one of the former companions of the New York obelisk at An, the hieroglyphs of the right column, on the south side, inform us:

"The son of the Sun, Thothmes (IV.),
Diadem of diadems, set it up in Thebes;
Capping it with gold,
Illuminating Uas with its beauty." §

* Mariette Bey, *op. cit.*, 171.

† Manners and Customs, III., 237.

‡ Parker *op. cit.*, 2.

§ Birch, in Parker, *op. cit.*, 45; Cooper, *op. cit.*, 40.

"In a fragment from the Temple of El Assasif, amidst a list of offerings which this monarch presented to the Temple of the god . . . are described

'two obelisks (of granite) rising to a height of 108 cubits, inlaid with gold throughout their length, made in their rays.' *

These obelisks have long disappeared."

Dr. Birch also mentions that the tombs in the Libyan range, behind Gournah and El Assasif, "are full of the scenes of the reign of Thothmeses (III.). Two great obelisks of 188 cubits high, with gilded tops, are recorded in these sepulchres."

Two obelisks were also given by Thothmeses III. to the Temple of Amen. "On each is one vertical line, containing the names and title of the King, and that 'he has set up two great obelisks capped (ben ben am nub) with gold.'" †

At Tanis, Petrie observed a sunk surface all over the pyramidion of one obelisk: "This was doubtless to fit on a cap of metal, flush with the general surface. It is singular that this evidence of a cap should remain, while the fellow obelisk is quite smooth to much nearer the apex." ‡

A singular application of another metal to the same purpose, only possible in so arid a climate, is recorded on the last of the Pharaonic obelisks, two small ones of Nectanebes, from the vicinity of Memphis, and now preserved in the British Museum. On one side, the King states, "he has set up an obelisk in his house of basalt; it is capped with black metal (iron); they have given him all perfect life, like the sun." §

* Lepsius, *Abth.* III., tab. 27, 11.

† Dr. Birch, Parker, *op. cit.*, 42.

‡ Petrie, Tanis, 26.

§ Parker, *op. cit.*, 55.

Again, it should be remembered that the very object and idea of the obelisk, as an emblem of the dazzling Sun-beam, required, for the desired impression, both lustrous polish and brilliant gilding. The imposing and inspiring effect originally produced by this decoration may be understood from the following quotations :

In an inscription on a wall in the Temple of Amen at Ape, there is a description of the obelisks raised by Thothmeses III., in the construction of which silver, gold, iron and copper were not spared, and "which now shine in their splendor on the surface of the water, and fill the land with their light like the stars on the body of the heavenly goddess Nut."

In a similar way the impression produced by the obelisks of Queen Hatasu (or Hashepes) is described :

"The woman-King Makara, the gold among Kings, she has executed (these obelisks) as her memorial for her father, Amen of Thebes, since she had erected to him two large obelisks of hard granite of the South ; their tops are covered with copper of the best war-tributes of all countries ; they are seen a great many miles off ; it is a flood of shining splendor when the sun rises between the two." *

Their effect at a distance must have been (as suggested to me by Prof. G. W. Plympton) like that of our modern heliographs.

In the Flaminian obelisk, formerly erected at An by Seti I., and now on the Piazza del Popolo, at Rome, Seti is mentioned in the inscriptions of the central column on the west side, as

"The King, Pharaoh, establisher of justice,
(Who) fills An-nu with obelisks,
To illustrate with (their) rays †
(Or, "in the light of the beams of") ‡
The Temple of the Sun:"

* Brugsch, *op. cit.*, I., 378.

† Parker, *op. cit.*, 16.

‡ Birch, Parker, *op. cit.*, 47.

here also we find a plain allusion to these monoliths as emblems of the Sun-beam.

In view, therefore, of these four points, viz.,

(1) the testimony of the hieroglyphs on the south face of our obelisk, and of those on its fellow, now at London ;

(2) the indications of cement still adhering to the pyramidion and its broken off apex ;

(3) the predominant custom of gilding their obelisks by the ancient Egyptians and by the sovereigns of this dynasty, particularly at An ; and

(4) the appropriate effect of brilliance, intended to be produced by an emblem of light,

I would submit to the judgment of this Society, the educated citizens of New York, and the intelligent Park Commissioners who have this monolith in their care, that good taste and consistency require the following restorations :

(1) the addition of a well gilded pyramidal cap of some durable metal, for a short distance down over the apex of the pyramidion, perhaps nearly down to the picture squares. For the protection of the monolith from lightning, this cap might be connected with the ground by a stout copper lightning-rod, running down the N. W. (the least conspicuous) corner; it should be, at least in the upper part, gilded, to prevent staining the stone.

(2) the gilding of the surface of the stone, over the rest of the pyramidion-surface.

(3) the gilding of the hieroglyphs below, perhaps only those of the original central column of Thothmeses III., down to the bottom of the shaft. This

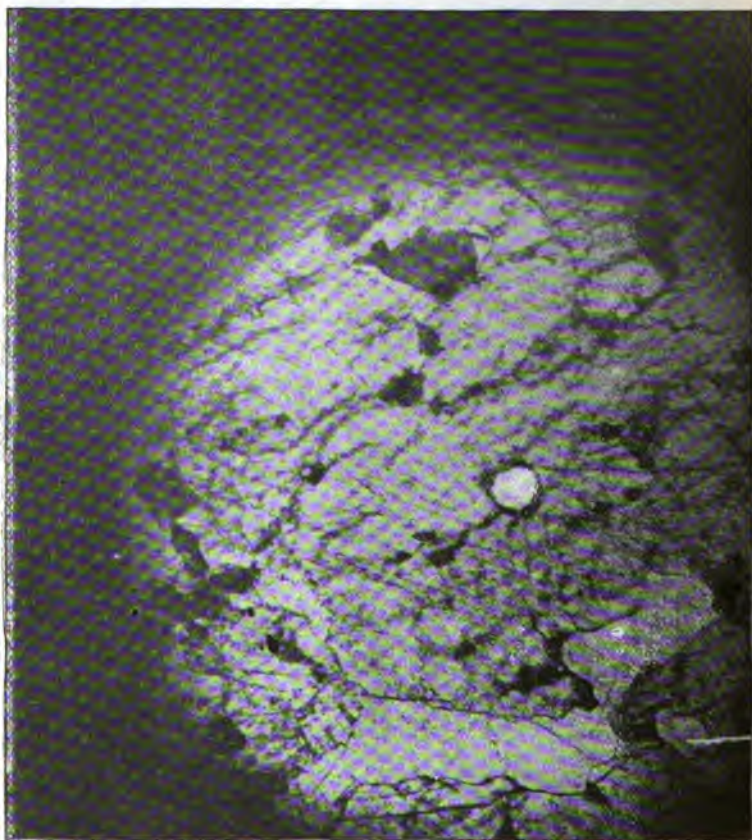
would chiefly apply to the N. and E. sides, as the hieroglyphs are largely obliterated on the S. and W. sides.

Such a replacement of the ancient decoration need not be expensive, and would prove a very efficient additional protection of the monolith from weather attack and entrance of moisture at its summit, the most vulnerable point, as well as within the hollows of the intaglios.

21. *The Attack of the Last Enemy.* It need hardly be added, how irreparable would be the loss to the value and interest of the obelisk in our eyes, if there should be any further injury to these hieroglyphics. Through them we trace almost its whole story of adventure. Yet this is the very danger which still threatens many of them, but a danger which can be prevented. For we have now to consider the decay of its surface until eight or nine years ago. As to the causes of that decay many views have been advanced, whose discussion is deferred to another occasion. When warned, it is said, even before the erection of the monolith, in regard to its need of protection against our climate, Commander Gorringer seemed to find it as difficult to believe that the imperishable "heart-stone" of Syené could be in danger, as to anticipate that, in a few months more, his own stout heart would give way forever on earth; and he replied: "The Obelisk has lasted nearly 4000 years, and will probably last 4000 more." * This seemed to be confirmed by the examination of a geologist from Philadelphia, who reported that the stone was sound. But, in defiance of the Quaker, within a couple of years, little pieces of the granite began to

* Trans. N. Y. Acad. Sci., V. (1886).

drop all around the base. Almost an ounce of these was then swept up by another expert and carefully



FRESH GRANITE, QUARRY AT SYENE.

weighed, who reported that, at that rate, it would take 6000 years to do any appreciable harm.*

But now great flakes began to fall. For there was a deep and insidious internal decay going on, of which

* Evening Post, N. Y., Oct. 30, 1883. Building, VI. (1887), No. 24, 1.

he had no suspicion. This I can now illustrate to you by two views; first, by a photograph, under the microscope, of a thin slice of the original granite fresh from the quarry of Syené. This shows the feldspars and



WEATHERED GRANITE, FLAKE FROM NEW YORK OBELISK.

other minerals in a comparatively solid and transparent condition, tightly hugging that bright little crystal of oligoclase—the most perishable of all—in the middle.

But now look on this picture—a similar slice from a decayed flake on the surface of the Obelisk, after near-

ly five years' weathering—as it must be confessed, full of the crow's feet and wrinkles and lines of age. Such are the results of life in New York !

In the fall of 1884, the danger was brought to the notice of the Park Commissioners, who decided, but not until the fall of 1885, to resort to a water-proofing process, founded on the application of melted paraffin to the artificially warmed surface of the stone. As I was not then consulted on the matter, I feel the more free to express the opinion that the selection of this process was most fortunate, in regard to its own fitness for the purpose in view ; while, of course, if it had not been under patent, its application to a public monument would have been preferable and less open to objection. Meanwhile the poor Obelisk had stood here, entirely unprotected from the elements, for four years and eight months.

In the preliminary cleaning of its surface, many spots were found deeply decayed, especially on the south and west sides of both shaft and pedestal—some large pieces so loose that they would scarcely bear the hand upon them without falling. A Park Commissioner directed the manager “ not to remove any flakes from the surface unless he was obliged to do so.” A large number of those flakes hanging most loosely and crumbling were so removed, to the extent of two and one-half barrels full. This whole procedure, which, of course, had no necessary connection with the subsequent process of treatment, was due to a most deplorable error of judgment. All the loose fragments should have been hardened and re-cemented in place, whatever the time and cost required. The sculptured surface of the Obelisk,

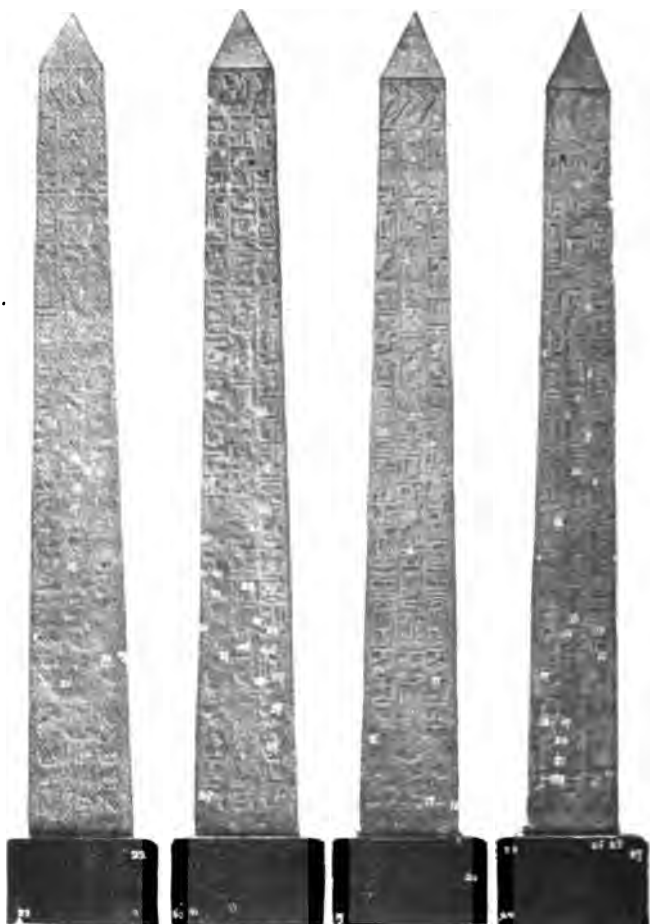
in its misfortune, should have been skilfully treated for preservation, as a jeweller would treat the crumbling surface of an ancient intaglio.

On Nov. 6, 1885, the water-proofing was begun and completed in a week. Flat surfaces of the stone were warmed for a couple of minutes by a charcoal stove, held an inch or two away, and projecting parts by a benzine blast-lamp. Then the melted paraffin was applied with a brush, and, the surface being re-warmed, the paraffin sank into the stone, probably a little over half an inch. Since that date, during the last seven years, there has been no sign of further change in the stone, no visible decay, not a single fragment fallen.

In regard to the preservation of similar obelisks in Europe, it may be added that the Paris obelisk, formerly at Luxor, was varnished with a solution of caoutchouc; the London obelisk, soon after its arrival, by the engineer, John Dixon, with a solution of water-glass, and again, later, by Mr. John Browning, with a solution of gum dammar, containing also wax and corrosive sublimate. There is some uncertainty whether, on either monolith, the surface has been satisfactorily protected from crumbling.

In the winter of 1889, a committee of six persons, appointed by the Park Board, as experts, re-examined the Obelisk, made various experiments, and unanimously reported, in the following May, 1890, that they had found the general surface satisfactory, and the water-proofing process so well adapted to the purpose that it was desirable to introduce more paraffin to a greater depth into certain of the old badly decayed spots. A chart of these was prepared, numbered down-

ward on each face. When lightly tapped, such a spot gave forth a dull, hollow sound, indicating that a fine



DECAYED SPOTS, FACE OF NEW YORK OBELISK.

crack ran underneath, which, on account of its depth, may not have been filled with paraffin during the waterproofing. If ever such a crevice should allow the entrance of rain-water, there will enter, too, the spear of

the Ice King, the tiny sheet of water will expand with irresistible force, and a hieroglyph will fall.

In the early part of July, 1850, a second committee devised certain changes in the apparatus and process, to promote the utmost safety in its application. Experiments were carried on upon a huge boulder of granite of similar nature, discovered near Bronxville, in Westchester County, fully three times the bulk of the obelisk. But let no one trust the apparent evidence of his own eyes and hereafter charge that this huge boulder was roasted until it split in two! Nature cleaved that rock long ago. The low degree of warmth really used can be judged from the fact that a child might plunge his hand, like a martyr of old, into the caldron of melted paraffin, but without discomfort; it is a temperature of 146° F., that in which the surfaces of this and other happy obelisks have basked in the sun of Egypt for thirty or forty centuries.

It was recommended by the Committee, to use only the charcoal stove, and to apply that at a distance of two feet from the decayed surface, for a period of at least two hours on each spot; then immediately to adjust closely to the spot a three-sided tank, kept filled with melted paraffin, as long as this would soak into the warmed stone—to a depth of about 2 inches. The process would require over four hours' careful work on each of the decayed spots, of which there are about 111.

As to cost, you may remember the statement by the Director of the Metropolitan Museum of Art, that the care of a single collection in that building now costs \$4000 per year. The expenditure of about half that

sum, once for all, is likely to complete the protection of these spots. So far too, remember, the Obelisk has itself cost New York City nothing; with the help of its good friend, it came to us a free gift. The only expense, less than a thousand dollars, resulted from our own neglect of it, up to the year 1885.

In response to these recommendations of the committees, nothing was done in the summer of 1890. But a perusal of the attractive columns of the City Record, December 30, 1890, exhilarated our hearts over an official notice, to the effect that, at last, on application of the Park Board, the expenditure of \$2800 on the re-treatment of the decayed spots, had been authorized by unanimous vote of the Mayor and Board of Aldermen.

Since then the two Committee reports have reposed, perfectly safe and innocuous, in the archives of the Park Board.

Last June, 1892, however, an application was made by the President of the Park Board, for an appropriation of \$2000 for the purpose, to the Board of Estimate and Apportionment, and, I am informed, this appropriation for the repair of the Obelisk has since been made. Under the supervision of the President of the Board and his able associates, we may now confidently look forward to speedy preparations for this important work, since they have now entire authority for the expenditure, and also—most lucky of Boards—the means! But beyond the coming summer, there is peril. Where an Obelisk is concerned, it is as dangerous to play with frost as with fire. We know the fancied security and its disastrous results from the years 1881 to 1885.

Meanwhile, there stands the monolith, in this last misfortune, to face the bitter winter, its decayed spots still giving to the touch that ominous hollow sound. If we have reason to prize it as a unique relic of antiquity, the oldest on our continent ; or for its testimony to the workingman of New York of the patient and thorough work of his brother at Syené ; or for its precious historical and religious associations ; or, above all, as it seems to me, for its cheery message from the wisest and most patient of ancient nations to the most active, restless and discontented nation of to-day, a message of light and hope—the good time coming—then let us guard and care for our trust.

All Central Park in its beauty might be blotted out and be revived again ; but all the wealth of New York could not replace one fallen hieroglyph.

GEOGRAPHICAL NOTES.

BY

GEO. C. HURLBUT, *Librarian.*

THE GREAT CITIES OF THE WORLD.—The ninth volume of *Die Bevölkerung der Erde*, issued at the end of February as *Ergänzungsheft* Nr. 107 of *Petermanns Mitteilungen*, is the work of Dr. Alexander Supan, and is wholly dedicated to the statistics of population in places—cities, towns, communes, districts, villages, etc.

The details are admirably arranged, and are classified by continents and countries, according to the latest available returns, or estimates.

The results brought together in pp. 125–128 will surprise many readers. These pages contain a list of the 270 cities known to have a population of more than 100,000, and a table of their geographical distribution. The list is headed, of course, by London with 4,415,958 inhabitants. Then follow, in order :

Paris, 2,712,598.

New York–Brooklyn, 2,352,150.

Berlin, 1,763,543.

Canton, 1,600,000.

Vienna, 1,364,548.

Wu-chang–Han-yang–Hankau, 1,200,000.

Tokyo, 1,155,290.

Philadelphia, 1,105,277.

Chicago, 1,099,850.

Siangtan, 1,000,000.

Si-ngan, 1,000,000.

Twenty-three cities number between 500,000 and 1,000,000 inhabitants. Among these are St. Petersburg, 954,400; Tien-tsin, 950,000; Constantinople, 873,565; Bombay, 821,764; Calcutta, 810,686; Rio de Janeiro, 800,000; Moscow, 798,742; Glasgow, 772,040; Hamburg-Altona, 734,625; Manchester-Salford, 703,479; Liverpool, 697,901; Boston, 598,669; Birmingham, 570,460; Buenos Aires, 554,713; and Pekin, 500,000.

The group of cities with a population of less than 500,000 includes: Budapest, 491,938; Osaka, 473,541; Brussels, 471,789; Madrid, 470,283; St. Louis, 466,939; Naples, 463,172; Madras, 452,518; Warsaw, 443,426; Baltimore, 434,439; Lyons, 429,295; Amsterdam, 406,532; Shanghai, 400,000; Melbourne, 385,795; Cairo, 374,838; Cincinnati, 373,566; Copenhagen, 373,123; Leipzig, 357,147; Munich, 350,594; Edinburgh, 333,268; Mexico, 329,535; Dresden, 322,633; Marseilles, 321,499; Dublin, 311,209; Prague, 310,483; San Francisco, 298,997; Milan, 295,543; Rome, 273,268; Antwerp, 268,397; New Orleans, 247,606; Sydney, 246,649; Stockholm, 246,454; Lisbon, 246,343; Washington, 202,978; Havana, 200,448; Frankfurt $\frac{1}{2}$, 198,436; Genoa, 193,639; Florence, 168,915; Damascus, 168,000; Christiania, 148,319; Nuremberg, 142,590; Venice, 129,445; Athens, 107,251; Valparaiso, 104,952; Lima, 103,556; and Bagdad, 100,000.

Of the twelve cities with more than 1,000,000 inhabitants, 4 are in Europe, 5 in Asia, and 3 in America. Of those with between 100,000 and 1,000,000 Europe

has 112, Asia 100, Africa 7, America 37, and Australia 2.

THE EXTREME HEAT AND COLD ENDURED BY MAN.
—Under this heading *Science* (January 27, p. 49) has an article by the Marquis de Nadaillac, who writes :

"But probably the highest amount of cold ever suffered by white man is the one recorded by Mr. Gilder, a reporter of the New York *Herald* attached to the expedition which, under command of Lieutenant Schwatka, went in search of Franklin. In the letters sent home during the winter of 1879-80, so severe in all parts of the world, he speaks of the thermometer lower than -71° C."

This is not quite correct. Lieutenant Schwatka's report of his expedition will be found in the JOURNAL of the American Geographical Society for 1880, Vol. XII., pp. 246-258. On p. 255 is the following statement :

"The coldest weather encountered was -71° F., January 3d, 1880; the average for that month, which was the coldest, being $-53^{\circ}.2$, F."

Mr. Gilder, in his letter to the *Herald*, must have referred to the Fahrenheit thermometer; and the 71 degrees below zero mentioned by Lieutenant Schwatka are equivalent to 57.22 degrees below the zero of the centigrade scale.

In another place M. de Nadaillac speaks of Verkhoyansk, "a small Siberian town at the mouth of the Lena." Verkhoyansk, supposed to be the coldest place in the world, is a small town in Eastern Siberia, but it has nothing to do with the Lena. It is situated, as the name implies, on the upper course of the Yana river. The recorded observations at this place show a mean annual temperature of $2^{\circ}.74$ below zero, and for January, the coldest month, a mean of $63^{\circ}.58$ below zero, Fahrenheit.

M. de Nadaillac is also in error in supposing that Lieutenant Peary made the nearest approach to the North Pole. The highest point reached by Mr. Peary was 82° , but others have gone beyond 83° N. Latitude.

THE FLOATING ISLAND IN THE ATLANTIC.—Dr. Carl Ochsenius sums up, in *Petermanns Mitteilungen*, Band 39, II., the record of the floating island first seen July 28, 1892, in $39^{\circ} 30'$ N. Latitude, and 65° W. Longitude, not far from the New Jersey coast. It was then a little over 100 feet square, and was covered with a thick growth of vegetation 30 feet in height; and it was visible at a distance of seven nautical miles. It consisted apparently of a portion of woodland, held together so strongly by the roots of the plants that it was able to resist the force of the ocean waves. It was next met with on the 26th of August, in N. Latitude $41^{\circ} 49'$, W. Longitude $57^{\circ} 39'$, and it must have encountered a fierce cyclone on the 13th and 14th of September without breaking up, for it was seen again on the 19th of September in Latitude $45^{\circ} 29'$, Longitude $42^{\circ} 39'$ W. Since then it has not been reported, and the probabilities are that it went to pieces in the October storms. So far as known, it had drifted more than 1000 miles, at the rate of a mile in an hour, but the real length of the voyage must have been much greater. The character of the vegetation, if certainly known, would furnish a hint as to the origin of the island; but, in any case, the incident serves to show that animals and plants may have been transported in some similar way from one land to another, across breadths of ocean hitherto regarded as impassable bar-

riers. At the same time, the chances against the survival of such a raft with its living freight are not to be underestimated. The animals and plants would perish in no long time for want of fresh water; and even if a short voyage brought them to land the breakers would make an end of them.

METEOROLOGICAL OBSERVATORIES IN THE ATLANTIC.—Prince Albert of Monaco advocated, at the session of the *Académie des Sciences*, held on the 18th of July, 1892, the establishment of meteorological observatories on the islands of the Atlantic Ocean.

The Azores, hitherto without telegraphic communication with the continent, will probably be united with the rest of the world by submarine cable during the present year, and it will then be possible, as the Prince says, to know at any moment, by the telegrams sent from Cape Verde, from the West Indies, the Bermudas and the Azores, the progress of atmospheric disturbances arising on the Atlantic.

He observes that the Cape Verde islands occupy a position not far from the region in which originate most of the great cyclones that pass over the West Indies and the United States and then, slanting towards the east, frequently reach the European coasts.

It may be said that the majority of the perturbations, the centre of which has passed near the Bermudas, will be felt more or less strongly in Europe.

The Azores lie almost at the central point of the curves traced by the displacement of the atmospheric disturbances originating on the Atlantic, and by the whirling circulation of the surface ocean currents.

Pico, which rises on the island of the same name to the height of 2222 metres (7290.16 feet), might be utilized for the establishment of a supplementary post for observations on the movements of the upper strata of the atmosphere.

Other observatories might be established at Madeira and the Canaries.

The data collected at these oceanic stations might be centralized at Monaco, and thence communicated to all points.

Prince Albert suggests that the countries most interested in the progress of practical meteorology come to an understanding with regard to the measures for carrying this plan into effect.

COLUMBUS AND THE VARIATION OF THE COMPASS.—Prof. Dr. Hellmann, who represented the Berlin Gesellschaft für Erdkunde at the Italian and Spanish celebrations last autumn, heartily commends all that he saw and heard.

His report appears in the *Verhandlungen, Band XIX., No. 9 u. 10*; and on pp. 484-485 he makes a serious contribution to the history of the discovery.

The Admiral's diary, as it has come down to us, records on the 13th of September, 1492, an observation on the behavior of the compass. It was believed up to that time that the needle invariably pointed to the north; but that day Columbus first noticed its variation, or declination.

It is well known that the genuineness of the diary has been called in question, and with it the right of Columbus to the honor of this important observation.

Dr. Hellmann is able to furnish corroborative evidence in the matter. He says that Mr. Wilde, a German residing in England, has elaborated a new and purely mathematical theory of the earth's magnetism. He has fortified this theory by experiments, and has calculated backwards the direction of the lines of equal declination for the month of September, 1492, with the result that the line of no variation is found at about the point where Columbus passed it and recorded his observation.

CHRISTOPHE COLOMB DEVANT L'HISTOIRE PAR HENRY HARRISSE. 8°. PARIS, 12 OCTOBRE, 1892.—Mr. Harri-
 risse reaffirms in this book, with eloquence and heat, his entire conviction that Columbus discovered America. Most men believed this before Mr. Harri-
 risse began to write, and his conviction, a serious matter to himself, hardly excuses the addition of 120 octavo pages to the mass of unnecessary printed words on the subject of the discovery and the discoverer. Notwithstanding its title, the present work has little to do with history, and not much more with Christopher Columbus. It is, in fact, a tirade, now strong, now feeble, against Pinzon and Magellan, Mr. Justin Winsor and the Madrid Academia de la Historia, the Columbian Exhibition at Chicago, Emilio Castelar, Italy and Mr. John Fiske; and, like most tirades, it says little for its author.

Fernández Duro is attacked with a persistence which seems to tell of a private grief; and on pp. 3 and 4 Mr. Harri-
 risse ridicules a member of the Academia de la Historia, who explained the name Guanahani by the Hebrew words, *Waana-hen-i*, meaning, "Where is the land? There": words exchanged between two Jewish

seamen on one of the three vessels in sight of the island. The name of the academician is not given, but the story, which first appeared in Mexico, was set in its true light eighteen months ago by Fernández Duro, who is of the Academy. A short article by him is printed in the *Boletín* of the Madrid Geographical Society, Tomo XXXI., Nos. 4-5-6, pp. 295-299, with the title: "Which of the Bahamas is the island that Columbus named San Salvador?"* and this article ends with a humorous account of a publication just received from Mexico, the work of D. F. Rivas Puigcerver. This publication, entitled, "The Jews in the New World," † told the tale of the Jews on the caravels and the remarks in Hebrew from which the name Guanahani was taken, with the additional information that one of the Jews was Rodrigo de Triana, the sailor who first raised the cry of "Land!" "Señor Rivas Puigcerver," says Fernández Duro, "closes his paper by affirming that on the return to Spain the pension, offered to him who first saw land, was unjustly given to Columbus; and Rodrigo de Triana, the converted Jew whose voice announced the discovery, seeing that his well-earned reward was taken from him, crossed the Strait (of Gibraltar), renouncing his religion and his fatherland. In Barbary he rehearsed to the Hebrews this veracious history, according to which Guanahani, that is, *waana-hen-i*, will forever bear testimony to the influence exercised by the Jews at the

* Cuál es, entre las Lucayas, la isla que denominó Colón de "San Salvador, por D. Cesáreo Fernández Duro.

† Titúlase *Los Judíos en el Nuevo Mundo*. México. Impr. del Sagrado Corazón de Jesús, 1891, en 8º, dos hojas.

ends of the universe." (*Bolett'n*, Tomo XXXI., Nos. 4-5-6, p. 299).

The sense of humour is not to be acquired and the lack of it may be forgiven; but Mr. HARRISSE is endowed with a lively fancy, not always under control.

ALBO DI ONORANZE INTERNAZIONALI A CRISTOFORO COLOMBO. INIZIATO DA ANGELO DE GUBERNATIS E CECILIO VALLARDI. OFFERTO IN DONO ALLA CITTA DI MILANO PEL FAUSTO RICORDO DEL QUARTO CENTENARIO DELLA SCOPERTA DELL' AMERICA. 8°. MILANO-ROMA. 1892.—This album, designed by Prof. Angelo de Gubernatis, is one among the many curious memorial publications of the Columbian year. It contains letters, sketches, musical compositions, poems, etc., reproduced in fac-simile, from contributors in various countries. Seven hundred and eight persons express themselves in this collection concerning the merits of Columbus. The ambassadors and ministers come first; then the Italian orientalists, writing in Arabic, Coptic, Chinese, Sanskrit, etc.; then the Italians who prefer their own tongue, and after them the men of other countries, European, African, American and Asiatic. Most of these compositions have the merit of brevity, and not a few are original in several ways. A Styrian professor writes that North America rivals Europe in classical writers, like *W. Irving Prescott Wallace*, and that *Taylor* opened China and Japan to the commerce of the world in 1843. Mahamahopadhyaya Kavirag'a Syamaladasa declares, in the English translation of his Sanskrit verses, that Columbus, "Hoping to reach India by way of Ocean, set out

again, and he, the clever-fellow, discovered the land of South-America, heretofore unknown." Ernest Renan quotes Horace :

Illi robur et aes triplex
Circa pectus erat

The spirit of Jules Simon's letter is in this extract : "Christopher Columbus is the greatest of all. He gave to the world a new world ; and this new world is refashioning the world." The quotation from the *Medea* of Seneca appears again and again, in Latin and in translation. Tennyson heads the list of the English writers, with the lines from his poem entitled "Columbus." Mr. Gladstone writes that he has been obliged, for reasons given, to decline taking part in memorials of the dead, and asks to be excused in the case of Columbus. Mr. Froude thinks that the monument in the cathedral at Havana ought to be made more worthy of the great name which is inscribed upon it. Herbert Spencer's letter is in these words : "Be their rank or position what it may, from emperors and kings downwards, those who have done nothing for their fellow-men I decline to honour. I honour those only who have benefited mankind, and, as one of them, I honour Columbus." Mr. Huxley sends a quotation from Ferdinand's life of his father. The Polish contributors are in great force. Carmen Sylva writes a German poem on Columbus in chains, and a painting, which is not reproduced. The University of Salamanca protests against the misrepresentation of its attitude towards Columbus, declaring that it was not consulted by the Catholic Sovereigns, nor did it take part as a body in the supposed public conferences at San

Estéban, in November, 1486. The Hungarians close the European list. Egypt is the only African country represented. The Argentine Republic, Brazil, Mexico and, in the United States, Cornell University do duty for America.

THE LOUBAT PRIZES AT COLUMBIA COLLEGE.—Attention is invited to the following notices :

COLUMBIA COLLEGE IN THE CITY OF NEW YORK

Mr. Joseph F. Loubat has established, at Columbia College, two prizes, a first prize of \$1000 and a second of \$400, for the best works published in the English language upon the history, geography, archæology, ethnology, philology, or numismatics of North America. The competition for these prizes is open, under the deed of gift, to all persons, whether connected with Columbia College or not, and whether citizens of the United States or of any other country. The first award will be made at the close of the present year for the best works published since January 1, 1888. No works will be considered save such as rest upon original research and constitute a distinct contribution to science. In order to ensure consideration of their works, authors are invited to send copies to the President of Columbia College, not later than June 1, 1893; but the competition will not be restricted to works thus submitted. Copies of the regulations adopted by the Trustees can be obtained from the President's Secretary.

Mr. Loubat has provided a permanent endowment for these prizes, which will make it possible to award them at least every five years. Beginning with the competition of 1898, it has been decided to divide the above list of subjects into two groups, in which the award will be made alternately. These groups will consist, respectively, of history, geography, and numismatics; and of archæology, ethnology, and philology. It has also been decided that, after the present year, Mr. Loubat's foundation shall be employed to stimulate research and not simply to reward the authors of meritorious works published without reference to these prizes. Early in 1894 the group of subjects selected for the competition of 1898 will be made known, and a number of topics will be announced to which the competition will be primarily restricted. That is, the College will call for the investigation of certain questions and the publication of the results, and the best works produced in answer to this call, if of sufficient value, will receive the prizes. But if no works upon the topics suggested seem worthy of an award, the prizes will be adjudged to the best works falling within the general group of subjects designated for the period.

It is hoped that Mr. Loubat's generous foundation will serve to encourage American research in a field that is peculiarly our own, but in which much of the best work has hitherto been done by strangers.

SETH LOW, LL. D.,
President.

LOUBAT PRIZE.

Regulations for 1893.

I. Two prizes, a first of \$1000, and a second of \$400, the gift of Mr. Joseph F. Loubat, shall be awarded in December, 1893, to the authors of the best works published in the English language upon the history, geography, archæology, ethnology, philology, or numismatics of North America. The competition for these prizes shall be open to all persons, whether connected with Columbia College or not, and whether citizens of the United States or of any other country.

II. The conditions of competition are:

- (a) That the work fall within the above list of subjects.
- (b) That it be written by one person.
- (c) That it embody the results of original research and constitute a distinct contribution to science.
- (d) That it shall have been published not earlier than 1888, and not later than April 30, 1893. But works consisting, or to consist, of a series of volumes, shall be admitted to competition if any volume shall have been published within the period named.

III. To insure consideration of their works, authors are invited to send three copies of each work to the President of Columbia College, not later than June 1, 1893; but the award shall not be limited to works so submitted. Copies of works submitted shall be placed, after the award, in the Library of Columbia College.

IV. Neither of the prizes shall be divided.

V. The recipient of a prize shall present five copies of his work to Columbia College, which copies shall be distributed in accordance with the conditions prescribed in Mr. Loubat's deed of gift. Every subsequent edition of a prize work shall contain, upon the title-page, the words,

"Loubat Prize,

Columbia College in the City of New York. 1893."

VI. The Committee of Award, to consist of three members, shall be appointed, not later than February 1, 1893, by a committee composed of the President of Columbia College and the Deans of the Faculties of Political Science and Philosophy.

LOUBAT PRIZE.

General Regulations.

I. Two prizes, viz, a first prize of not less than \$1000, and a second prize of not less than \$400, to be known as the Loubat Prizes, shall be awarded in the year 1898, and in every fifth year thereafter, to the authors of the best works on the history, geography, archæology, ethnology, philology, or numismatics of North America. The competition for these prizes shall be open to all persons, whether connected with Columbia College or not, and whether citizens of the United States or of any other country.

II. For the purpose of the award the subjects above named shall be divided into two groups, in which the award shall be made alternately, viz.:

- (a) History, geography, and numismatics.
- (b) Archæology, ethnology, and philology.

III. The conditions of competition shall be :

- (a) That the work fall within the group of subjects designated for the current quinquennial period.
- (b) That it be written by one person.
- (c) That it embody the results of original research.
- (d) That it be published in the English language.

IV. Neither of the prizes shall be divided.

V. A Committee of Award, consisting of three members, shall be appointed, not later than January, 1894, and at the beginning of each succeeding quinquennial period. It shall be appointed, and any vacancy occurring therein shall be filled, by a Committee composed of the President of Columbia College, and the Deans of the Faculties of Political Science and Philosophy. The Committee of Award shall determine and announce, within two months after its appointment, what further conditions, not inconsistent with the purpose of the endowment, shall be established for the current quinquennial period. In particular, this Committee may recommend one or more special topics of investigation, and limit the awards, primarily, to works upon such topic or topics. It shall also determine and announce whether works shall be submitted in competition, and if so, in what manner and at what date.

VI. The Committee shall report to the President of Columbia College not later than May 1st, of the year designated for the award. If special topics of investigation shall have been recommended and no work upon these topics shall appear worthy of a prize, the Committee shall have power to confer the prizes upon the authors of the most meritorious works falling within the provisions above laid down in Paragraph III., and published within the preceding ten years. If but a single work upon a suggested topic shall appear worthy of a prize, the Committee shall have power to award the second prize on the broader basis of competition above indicated. If no works, or but a single work, be found worthy of an award, both or either of the prizes may be withheld.

VII. All works submitted in competition shall be placed, after the award, in the Library of Columbia College. The recipient of a prize shall present five copies of the prize work to Columbia College, which copies shall be distributed in accordance with the conditions prescribed in Mr. Loubat's deed of gift; and all subsequent editions of the work shall bear upon the title-page the words :

" Loubat Prize,

Columbia College in the City of New York,"

with the date at which the prize was conferred.

SETH LOW, LL.D.,
President.

MAPS OF MARYLAND.—Johns Hopkins University Circular, Vol. XII., No. 103 (February, 1893), is principally devoted to a paper by Prof. George H. Williams

on the maps of the State of Maryland. These are arranged in six categories :

1. Maps of early explorers and settlers.
2. Surveys of boundaries.
3. Topographical and geological surveys authorized by the State.
4. Charts published by the U. S. Coast Survey.
5. Private surveys (railroads, canals, counties, etc.).
6. Recent work published or in preparation by the U. S. Geological Survey, the Johns Hopkins University, and the Maryland World's Fair Commission (1884-1893).

The most important of the early maps is the one made by Augustine Herman, engraved by Faithorne, and published in 4 folio sheets, in London, in 1670. The scale is 12 miles to an inch.

In 1834, the General Assembly passed an act arranging "to make a perfect and complete map of the State according to the plan and drawing. Prof. J. H. Alexander, appointed engineer under the act, prepared a topographical map which was never published in full size, but still exists in two manuscript copies. It measures 6 feet 7 inches by 3 feet 5 inches, on a scale of 1:200,000, with 50 feet contour lines east, and 100 feet contour lines west of the Monocacy river. Prof. Williams assigns to it the date of 1836. It was traced for the use of the Government, in 1861, by order of Gen. Scott.

The work of the U. S. Coast and Geodetic Survey in Maryland is fully described in a statement prepared by Assistant J. W. Donn, under the direction of Superintendent Mendenhall.

The Private Surveys include State, County and City Maps, Railroad and Water Supply Maps. The oldest of these are an Exact Plat of Baltimore town, of 1756. and a plan of Baltimore, of 1780, both in manuscript.

The recent topographic work has been done by the U. S. Geological Survey. All the area of the State has been surveyed, with the exception of the Eastern Shore (the part lying east of Chesapeake Bay), and a strip 13' 28" wide lying between the parallels of 39° 30' and Mason and Dixon's line (39° 43' 28"), and extending from Emmittsburg to the Delaware boundary. West of the meridian of 77° 30', the mapping is on a scale of 2 miles to an inch (1:125,000), with 100 feet contours. East of 77° 30' the same scale is applied in the three atlas sheets published, but with 50 feet contours; and the 1 mile scale (1:62,500), with 20 feet contours, has also been employed for all the territory thus far surveyed to the east of the meridian of 77° 30'.

Baltimore has received a great deal of attention. Prof. Williams notes three topographical maps of the city and its vicinity: the Baltimore Sheet of the U. S. Geological Survey on a scale of 1:62,500, with the city at the centre; the Baltimore Atlas Sheet of the U. S. Geological Survey, on the same scale, and with the city near the southern edge; and the Johns Hopkins University Topographic Map of Baltimore and Vicinity, on a scale of 1:62,500, and embracing over 400 square miles. This last map has also been issued, geologically colored. A new geological map of the entire State, on a scale of 8 miles to an inch (about 1:500,000) is in course of preparation for the World's Fair book on the resources of Maryland.

A relief model of Baltimore and its neighborhood, on a scale of four inches to the mile and with no vertical exaggeration, is now in Johns Hopkins University; and a relief model of the entire State, to measure 7 by 12 feet, has been ordered by the Maryland Board of Managers for the World's Fair, and is now in course of construction.

THE MAPPING OF MISSOURI.—Under this title Mr. Arthur Winslow, with the assistance of Mr. C. F. Marbut, reviews, in the *Transactions* of the Academy of Science of St. Louis, Vol. VI., No. 3, the cartographical record of Missouri, from the Ptolemaeus Map of 1508 to the surveys now in progress. It is true that Missouri does not appear on the Ptolemy map, but Mr. Winslow, like the Nuremberg Chronicler, begins his work at the beginning, and wanders by the way. He makes Columbus enter the Gulf of Mexico and explore its southern coast.

The State of Missouri was admitted to the Union in 1820, but the boundaries, as now established, were not definitely settled till after 1850.

The period of explorations in the Missouri Territory may be said to open with the Lewis and Clarke expedition of 1804–1806, and to close with the Warren map (Vol. XI., Pacific Railway Surveys) published in 1858. Of this map, compiled by Lieut. G. K. Warren, Mr. Winslow says that it was much in advance of anything so far published, both as to accuracy of location and amount of detail included; and that, for the scale used, a much better outline map of the State could hardly be prepared from our best maps of to-day.

The U. S. Coast and Geodetic Survey began its work in the State in 1871 with the measurement of a base line in the Missouri bottoms, and by 1886 the chain of triangles had been carried across into Kansas; and in 1891 precise-levelling was completed, from St. Louis on the east to Kansas City on the west.

The Mississippi River Commission, organized in 1879, completed the survey of the river to the northern boundary of Missouri in 1891. The maps published by the Commission are on two scales; one series, of about 31 inches to the mile, showing the shore line, the positions of bars and the depth of water, with the topography on each side of the alluvial plain in five-foot contours, and distinguishing timbered and open country; the other, of a mile to an inch, being practically a reduction of the first series.

The Missouri River Commission, which began operations in 1878, has published one series of maps, on a scale of a mile to an inch, giving "an accurate delineation of the shore line, islands and sand-bars, the general topographical features of the valley and the line of bluff bordering the same, the whole checked by a system of triangulation carried along the river banks."

About one-third of the area of Missouri has been mapped by the U. S. Geological Survey. The work, begun in 1884, was continued without interruption up to July, 1889, when it ceased, and has not been resumed. The product is: 25 sheets for Missouri and 5 for portions of Missouri and Kansas, all on a scale of 1:125,000, or about 2 miles to an inch, with contour interval of 50 feet; and 2 sheets, including St. Louis and parts of St. Louis County and Illinois, on a scale of 1:62,500

(a mile to an inch) with contour interval of 20 feet.

Mr. Winslow objects to these sheets that the scale is too small and the contour interval too great to bring out the characteristics of the topography ; and, furthermore, that the method employed furnished a weak vertical control, so that the altitudes represented are very inaccurate in places.

Maps of some thirty counties of the State, prepared by the first and second geological surveys of Missouri, are extant. The geography and topography of these maps represent, it is said, very little original work ; but with them must be mentioned a topographic map of Pilot Knob and vicinity on a scale of 1200 feet to the inch, and a contoured map of the Granby mining district on a scale of 300 feet to the inch.

The third geological survey, now in progress under Mr. Arthur Winslow, has undertaken the preparation of detailed maps of different portions of the State. The scale adopted is 1:62,500, and the area represented by each sheet is a quadrilateral of 15" (*sic*) extent in latitude and longitude ; which may be, within the State, anywhere between 228 and 240 square miles.

There have been surveyed and plotted ten sheets ; and three or four more will be added during the present season.

Mr. Winslow thinks that the methods by which these maps are constructed are most satisfactory for accomplishing all the ends in view. His paper is illustrated by diagrams and by a copy of the Higginsville sheet of the geologic and topographic map ; but the proof-reading has been carelessly done. Such misprints as *Nur-*

emburg, Orteleus, Jamacia, Mercator (Girard), Frontinac, the peninsular, Sinex and Freemont, are not to be excused.

THE MISSISSIPPI RIVER AND ITS SOURCE.*—Mr. J. V. Brower, the author of this volume, says in his prefatory note :

“ To follow the channel of the Mississippi river to its utmost source in search of geographical facts, it became advisable to know of the historical record concerning discoveries from the mouth of the river to its source.

“ The examination of these records, co-extensive with the history of the discovery of the coast line of North America, imposed a duty requiring great care and labor. Examinations in the field at the source of the river have been accomplished with the same great care and labor that has been exercised in the field of historical research. . . . The formal dedication of the Itasca Basin to be perpetually used as a public state park, its legal status having been amply recognized in a grant of lands by the Congress, is one of the benefits of this examination.” . . .

Mr. Brower, in his account of the Spanish discoveries, is led to the conclusion that the Bay of Espiritu Santo of the Chaves maps was the present Galveston Bay, and that either the Canaveral river or the Rio de Flores of the maps generally was intended for the Mississippi itself.

About fifty-five pages are devoted to the French accounts ; the early territorial claims are then examined ; and on p. 119, Mr. Brower reaches Elk Lake, concerning which so much has been written, and William Morrison, who seems to have visited in 1803 the basin surrounding the source of the Mississippi. The expeditions are then taken up in their order from that of

* The Mississippi River and its Source. A Narrative and Critical History of the Discovery of the River and its Headwaters, accompanied by the Results of Detailed Hydrographic and Topographic Surveys. By Hon. J. V. Brower, Commissioner of the Itasca State Park, representing also the State Historical Society. With an Appendix by Alfred J. Hill, Esq. Illustrated. 8°. Minneapolis, Minn. 1893.

Pike in 1805-6 to the detailed survey by Mr. Brower as commissioner of the Itasca State Park, in the four years 1888-1892.

Mr. Brower finds that the Itasca basin is the most remote water-shed on the main river from its mouth at the Gulf of Mexico, and Itasca Lake the central reservoir at the lowest depression. The principal, longest and largest stream within the basin is the one discovered by Jean N. Nicollet in 1836, and this stream is found to be the Mississippi River; and the "true and actual source of the Mississippi is THE GREATER ULTIMATE RESERVOIR," under the Heights of Land. This Greater Ultimate Reservoir, though a positive discovery in grammar, is identical with the sources described by Nicollet in these words :

"The Mississippi holds its own from its very origin; for it is not necessary to suppose, as has been done, that lake Itasca may be supplied with invisible sources, to justify the character of a remarkable stream, which it assumes at its issue from this lake. There are five creeks that fall into it, formed by innumerable streamlets oozing from the clay-beds at the bases of the hills, that consist of an accumulation of sand, gravel and clay, intermixed with erratic fragments; being a more prominent portion of the great erratic deposit previous described, and which here is known by the name of *Hauteurs des Terres*—heights of land.

"These elevations are commonly flat at top, varying in height from 85 to 100 feet above the level of the surrounding waters. They are covered with thick forests, in which the coniferous plants predominate. South of Itasca lake, they form a semicircular region, with a boggy bottom, extending to the southwest a distance of several miles; thence these *Hauteurs des Terres* ascend to the northwest and north; and then, stretching to the northeast and east, through the zone between 47° and 48° of latitude, make the dividing ridge between the waters that empty into Hudson bay and those which discharge themselves into the gulf of Mexico.

"The principal group of these *Hauteurs des Terres* is subdivided into several ramifications, varying in extent, elevation, and course, so as to determine the hydrographical basins of all the innumerable lakes and rivers that so peculiarly characterize this region of country.

"One of these ramifications extends in a southerly direction, under the name of *Coteau du Grand Bois*; and it is this which separates the Mississippi streams from those of the Red river of the North.

"The waters supplied by the north bank of these heights of land—still on the south side of lake Itasca—give origin to the five creeks of which I have spoken above. These are the waters which I consider to be the utmost sources of the Mississippi.

"Those that flow from the southern side of the same heights, and empty themselves into Elbow lake, are the utmost sources of the Red river of the North; so that the most remote feeders of Hudson bay and the gulf of Mexico are closely approximated to each other."—(Report intended to illustrate a map of the Hydrographical Basin of the Upper Mississippi River, made by I. N. Nicollet,* while in employ under the Bureau of the Corps of Topographical Engineers, pp. 57, 58. Doc. No. 52. 28th Congress, 2d Session. Ho. of Reps. Washington, 1845.)

In terminating his report, Mr. Brower duly acknowledges that his explorations come after the labors of those who preceded him in 1803, 1832, 1836 and 1886, and claims only such measure of credit as a more extended survey and discovery may entitle him to receive. His acknowledgment does not contradict the order of events, and he deserves credit for the energy and industry which he has displayed in accumulating the data set forth in his 300 pages. An appendix by Mr. Alfred J. Hill tells how the Mississippi River and the Lake of the Woods became instrumental in the establishment of the northwestern boundary of the United States; and the whole work, which appears as Vol. VII. of the Minnesota Historical Collections, forms a handsome volume, abundantly illustrated with portraits, maps and views.

THE GEOGRAPHICAL SOCIETY OF THE PACIFIC.—In the *Transactions and Proceedings* of this San Francisco Society, Vol. III., 1892, Lieutenant J. P. Finley, U. S. A., has a paper on the weather, and the value of weather maps; Prof. George Davidson describes the discovery of San Diego Bay, and the eruption of the

*So printed on title-page.

Volcano Weniaminof in August, 1892; Prof. E. E. Barnard tells of the progress in the application of photography to astronomy; and Lieut.-Commander Z. L. Tanner, U. S. N., contributes an account of the recently completed survey for a submarine telegraph cable between the California coast and the Hawaiian Islands.

Prof. Davidson says that very little has been published on the geography of the peninsula in the neighborhood of the Volcano Weniaminof, the position of which is fixed by Tebenkof, in his second chart, in N. Lat. $56^{\circ} 05'$, W. Long. 159° .

The eruption of August, 1892, was reported by several observers. One of these, Capt. Applegate, of the schooner *Everett Hays*, was at Ivanof Harbor, 25 miles in a southwesterly direction from the volcano, on the 27th of August. He makes the following statement:

"About 10 o'clock Saturday night, the weather being calm and clear, a low, rumbling, intermittent sound was heard, and caused the crew to come on deck to ascertain the cause. There was no surf, and the cause was unknown. Between 11 and 12 o'clock, a dark cloud was observed in the sky, towards the northeast and about 2 o'clock A.M., this cloud had increased in volume and height until it covered the greater part of the northeast heavens. The low, rumbling noise had become a continuous roar, like the blast from a great furnace, and by 3 o'clock lurid flames could be seen amidst the smoke, which was now rising high in tremendous volumes from a single point, being by compass about northeast. The vast column of smoke reached an estimated height of two miles, and then expanded like a great spreading oak. From the lower edge of this great volume, colored flames waved like banners, and vivid flashes of lightning were apparently discharged into the base of the column. This grand display continued, until daylight caused the flames to be somewhat dimmed, but masses of dense smoke continued to roll upward all Sunday. Toward noon a light northwest wind sprang up, and the clouds began to trend to the southeastward, covering the mainland and the adjacent islands with a thick layer of ashes and volcanic dust.

"At the anchorage it was dead calm, and there was no perceptible movement of the sea on the beach, as would have occurred had there been earthquake waves. The continuous lightning discharges were accompanied by deafening peals of thunder, that were plainly heard at the Metrufan village, 50 miles distant, and at Unga Island, 75 nautical miles distant."

The *Everett Hays* left Ivanof Bay on Sunday and steered south to Pavlof Island. The ash cloud was plainly visible to the eastward until late on Monday.

Capt. Erskine, commanding the steamer *St. Paul*, when in latitude $53^{\circ} 05'$, longitude $155^{\circ} 52' W$, on Sunday, August 28, passed into a black cloud of volcanic ash, which nearly obscured the sun from 10 o'clock, A.M., to 2 P.M.; the sea was grey with the ashes and the decks were covered with them. They had a strong sulphurous odor.

The cloud was estimated at about 100 miles in length and from a half mile to a mile in height.

A bottle of the dark grey dust, gathered from the deck of the *St. Paul*, was submitted to Mr. H. G. Hanks, of the San Francisco Microscopical Society, and examined by him. The dust was found to be dark brown in color, slightly magnetic, fusing easily before the blow-pipe to a glossy black globule, which was magnetic. It gave a strong iron reaction and, when heated in a glass tube, water and a faint white sublimate. Under the microscope, the particles ranged in size between 0.005 and 0.00025 inch. Most of them resembled nearly transparent quartz, others were like hornblende. A qualitative analysis showed silica, oxide of iron, lime, alumina and water.

Lieut.-Commander Tanner sketches the rise and progress of submarine telegraphy, and then describes the surveys for a cable to the Hawaiian Islands. The lengths of the routes are as follows: the *Tuscarora's* line from San Francisco to Mauna Loa Bay, near the east end of Oahu Island, is 2093 nautical miles; the *Albatross* great circle line from Salinas Landing, Mon-

terey Bay, to Mauna Loa Bay, is 2091 miles; the *Albatross* rhumb line, to and from the same points, is 2107 miles. Seven miles must be added to these lengths, if the terminus be made at Waikiki. The *Thetis* line from Point Conception to Hilo is 2050 miles in length.

The surveys have established the existence of a great central plateau between the coast of California and the Islands, and a general, though moderate, rise of the ocean bed in the central regions. Lieut.-Commander Tanner considers that the surveyor's task is accomplished.

RAINIER, OR TACOMA.—The Tacoma Academy of Science held a meeting on the 6th of February last to discuss the question, whether Tacoma or Rainier is the right name of the great Washington mountain. Indians of three tribes were present and gave their testimony in favor of Tacoma, which was shown to be a modification of the original form, Tacobet.

Judge Wickersham read a paper on the subject, and reached the following conclusions:

1. The Puget Sound Indian name for the mountain is "Ta-co-bet"; the b in Indian is interchangeable with m, and hence we also find the word used as "Ta-co-man," and "Ta-co-ban."
2. The Yakima-Klickitat name is "Ta-cho-ma," with the "ch" as in German, but most frequently written as "Ta-ho-ma."
3. The name means "snow-covered mountain."
4. The word "Tacoma" is a fair, honest, Indian noun.
5. The word "Tacoma" should be preserved as the name of this royal mountain peak, and "Mount Rainier" should be abandoned.

It may be admitted that Tacoma is an honest, Indian noun, whatever that may be, and also that it is a pretty word; but these admissions leave the facts as they were.

Vancouver named Mount Rainier, by an undoubted right, in 1792, the very year in which Captain Gray, by the same right, gave the name of Columbia to the Oregon river; and the two names so bestowed will stand. The purely sentimental objection to Rainier is one hundred years behind time, and Judge Wickersham does himself and the Academy of Science no credit by adopting a disrespectful tone towards Vancouver.

THE DWARFS OF THE ATLAS.—Mr. R. G. Haliburton, at the Congress of Orientalists in London, called attention to the existence of a race of dwarfs in the Atlas range. Some additional information on the subject is furnished by Mr. Walter B. Harris in a letter written from Tangier, on the 31st of December last, to the *London Times*.

Mr. Harris, accompanied by Mr. Cunninghame-Graham, made a journey in Southern Morocco last November. At Amzmiz, not many miles to the southwest of Morocco, it was learned that a number of the so-called dwarfs were under the jurisdiction of the Governor of the place, and that one of his soldiers belonged to the race. Mr. Harris saw the man, who came from a peak above Imintella, a place mentioned by Mr. Haliburton. The soldier is described as slightly over 4 feet in height, of reddish brown color and, except for a few hairs on the chin, smooth-faced. Imintella was visited, but no dwarfs were found there. Farther on, however, the travellers met a caravan of donkeys, driven by seven men, none certainly above 4 feet 6 inches in height. They were of various ages. One wore a thick grey beard and another a small black

beard. They did not understand Arabic, and Mr. Harris's guide could make nothing of their speech. "In all," says Mr. Harris, "we saw, perhaps, thirteen or fourteen of these dwarfs, nor did we meet with one single negative to the question I repeatedly asked as to their existence."

They are strict Mohammedans; and they are said by the Moors to be a wild people, who live in the upper ranges of the mountains in built houses, and are given to shooting any who penetrate into their domains. Mr. Harris explains their existence as follows :

"I think that it is now conclusively proved that the small people of Mount Atlas are not 'pygmies'—that they are, in fact, merely a certain collection of Shleh tribes, who, through the high altitudes at which they live, and the extremes of climate they are subject to, from their poverty and inability to grow crops, from the scarcity and bad quality of such food as they are able to collect, have, in the lapse of centuries, become of almost extraordinarily stunted growth. Why, then, have they not been seen by former travellers? The answer is simple. Both Sir Joseph Hooker and Mr. Joseph Thomson, almost the only Europeans who have ever visited the Atlas, were during their travels entirely in lands governed by Kaids representing the Sultan, and the very proximity of these Kaids would drive the 'small people' to a distance, who would never on any account visit their castles. It is for this reason alone that the existence of a stunted race of Shleh people must have failed to have attracted their notice."

On his return to Mogador Mr. Harris visited the caves of Ain Tarsilt, excavated by troglodytes, who must have been men of a low stature, the roofs of the caves being only 5 feet above the floors, and the alcoves which served for beds being less than 5 feet in length.

No effort is made to establish a connection between the former cave dwellers and the diminutive men of the Atlas mountains, whose physical condition is sufficiently accounted for by climatic influences.

The Algiers *Atlas*, of February 9, quotes from *The Times of Morocco* a notice of these mountaineers com-

municated by an Englishman just returned from the foot of the Greater Atlas. This Englishman was within two hours' journey of the "shrine of Mulaī Ibraheem," and there learned that the shrine was visited by a number of small men and women from the south side of the mountains. To the question, why were these little people never seen in the plains? the answer was made that any of them found beyond their borders were seized and fined. The Englishman's Moorish servant and a servant of the Kaïd volunteered to go and spy out the land. They left early in the morning of one day and returned at noon of the next, bringing some of the sacred dust from Mulaī Ibraheem's tomb as irrefragable evidence; and told this story: They reached the tomb, and saw a man of ordinary stature carrying upon his back about two and a half hundred weights of flour to the top of the mountain, and descending again without any apparent effort. They had also seen there little men dressed in ordinary mountaineer garb, with women small and pretty, handsomely dressed, and decked out with jewellery and ornaments. These men and women they afterwards saw bathing in the sacred stream. One of the little men was measured with a string, and a knot was tied in it to show his height—4 feet 6 inches.

As the composition of three presumably healthy men, this may be called a poor story, and there is room for better things.

THE SOURCE OF THE NILE.—Dr. Oscar Baumann has traced the Nile to its source beyond the Victoria Nyanza, in the Kagera river, which rises in 4° S. Lat. among

the mountains on the eastern shore of Lake Tanganika. This discovery seems to establish the supremacy of the Nile as the longest river on the globe, the rank assigned to it in G. A. von Klöden's table, published in 1885. The length of the Nile is there estimated at 6470.2 kilometres (4020 miles), and that of the Mississippi-Missouri at 5882.1 kilometres (3655 miles).

Dr. Baumann's letter describing his journey appears in *Petermanns Mittheilungen*, 39 Band, II., p. 47, with a map of his route.

He started on the 8th of August, 1892, from Mwanza at the southern end of the Victoria Lake and kept a westerly direction through a mountainous, well-watered country. On the 5th of September he reached the Kagera (there called the Ruvuvu) and Urundi, the inhabitants of which, taking him for the descendant of their early kings of the Mwesi (the moon), greeted him with loud rejoicings and came in crowds to see him. Thence through grassy mountain land, with frequent outcroppings of granite, he kept on to the Akanyaru, which proved to be not a lake, but a river. The Wurundi give the name of *Nyanza* to any large body of water, and designate a lake, such as the Victoria, the Albert Edward, or even the Urigi, by the name of *Tanganyika*, which explains some of the errors with regard to the existence of lakes. September 11, Dr. Baumann crossed the Akanyaru into Ruanda, but could learn nothing concerning a great lake in that country. The people declared that the Akanyaru was their largest river.

Turning to the southwest he again crossed the Akanyaru, a day's journey from its source, and entered

Urundi a second time.' Here he had to sustain a bloody encounter with the Watusi. On the 19th of September he came to the source of the Kagera in the lofty, wooded crest of the mountains that form the water-shed above the Rusizi valley. The Warundi bury their kings in this place and call the mountains Misosi a Mwesi (Mountains of the Moon), and the whole Urundi country is called the Land of the Mwesi, or Moonland.

The broad valley of the Rusizi, shut in by high mountains (6600 feet), extends from Tanganika to the northward. Dr. Baumann was told that the Rusizi river had its source in a body of water (perhaps a lake) named Kiva, to the south-westward of the Mfumbiro mountains. This Kiva, he thinks, may be the Oso Lake of the maps. September 25 he reached the Tanganika at Usige, where the oil-palm grew luxuriantly and there were many green parrots. The lake was very low. He climbed the water-shed once more and marched to the south-eastward. On the way he had some sharp fighting with the Watusi (Wahima), and captured 200 head of cattle. The mountainous country was watered by the southern affluents of the Kagera, and of these the Luvirosa, which is the most easterly, rises in 4° South Latitude.

It was found that the water-shed of the Mlagarasi formed also a dividing line between climates; to the westward the rain fell every day, while the land to the eastward was parched. The Mlagarasi was crossed for the second time, October 16, and the journey ended at Tabora, where the letter was written on the 8th of November.

Not the least interesting result of this expedition is the restoration of the Mountains of the Moon to the domain of geography.

THE SOURCE OF THE CONGO.—The following telegrams, dated February 6, at Kinshasa (Stanley Pool), were received at Brussels, March 4 :

(1) "We arrived at Luzambo on the 7th of January, and at Kinshasa, February 5. We shall return to Europe by the Portuguese steamer probably in March.

"The Lukuga is the true stream of the Lualaba, and the problem of its navigation is solved; the whole country has been well studied. All the powerful Chiefs have peacefully submitted to the authority of the State, which is everywhere recognized.

"An Arab revolt has broken out at Kasongo. The resident, Lieut. Lippens, and his associate, Lieut. Debruyne, have been killed.

"Sefu, the son of Tipu-Tip, was beaten by Lieut. Dhanis in November, and driven beyond the Lomami.

"We left Katanga pacified and tranquil.

"The members of the expedition are in good health.

"DELCOMMUNE."

(2) "We arrived at Luzambo on the 11th of January, after having lost four hundred men by the famine.

"Captain Bia died at Katanga of sickness. We shall reach Brussels in April. We have marched 6,000 kilometres (3,728 miles) through the concessions of the Katanga Company.

"We have seen and have studied the whole country, and have peacefully obtained the submission of the territories comprised between Lake Moero, the Luapula, Lake Bangweolo, the southern frontier and the 24th degree of East Longitude.

"At Shitambo we set up the commemorative tablet to Livingstone, entrusted to Mr. Arnot by the Geographical Society of London.

"I take with me, as far as Boma, the nephew of King Kilima, the greatest Chief of the Bahusi.

"The four surviving members of the expedition are in good health.

"FRANQUI."

Commander Cameron, R. N., in his journey across Africa, heard of the Lukuga as the outlet of Lake Tanganika, and determined to find it. This was in 1874.

"On the 3d of May," he says, "there was a slashing breeze freshening up from

the eastward, and I made sail with many a hope that I might, in a few hours, find myself in the outflowing Lukuga. Shortly before noon I arrived at its entrance, more than a mile across, but closed by a grass-grown sandbank, with the exception of a channel three or four hundred yards wide. Across this there is a sill where the surf breaks heavily at times, although there is more than a fathom of water at its most shallow part.

"The Chief visited me, and informed me that the river was well known to his people, who often travelled for more than a month along its banks, until it fell into a larger river, the Lualaba, and that in its course it received the Lulumbiji and many small streams. No Arab, the Chief said, had been down the river, and traders did not visit this place, all beads and cloth required being obtained by sending to Ujiji.

"It rained very hard in the morning; but, in company with the Chief, I went four or five miles down the river until navigation was rendered impossible, owing to the masses of floating vegetation. It might be possible, however, to cut passages for canoes. Here the depth was three fathoms; breadth, six hundred yards; current, one knot and a half, and sufficiently strong to drive us well into the edge of the vegetation."—(*Across Africa, New York ed., pp. 214-215*).

Cameron was told that, four or five miles below, the river would be found clear for about the same distance, and then again obstructed; and so on, for a long way. Driftwood from the lake passed the inlet in which his boat lay, and worked into the grass. He was not able to secure an interpreter or a guide for the voyage down the river, and the cost of an expedition was unfortunately beyond his means; for the enterprise tempted him, and he turned away with reluctance. Stanley, two years later, examined the lake and the region, and came to the conclusion that the Lukuga, formerly an affluent of the Tanganika, was about to become its outlet and to find its way to the Congo.—(*Through the Dark Continent, N. Y. ed. Vol. 2, pp. 50-52.*)

Delcommune has had the good fortune to discover that the Lukuga issues from the great lake, passes through Lake Lanji and flows from the north as the Congo.

TITLES OF PAPERS IN GEOGRAPHICAL JOURNALS.

BERLIN. — *Verhandlungen der Gesellschaft für Erdkunde.*

Manners and Customs of the Negroes in the Togo Country (First Lieutenant Herold)—A Voyage of Exploration in a Sailing Ship in East-Asiatic Waters—From a Letter Written by Prof. W. Sievers at Puerto Cabello to Baron Richthofen—On the recent Discovery of Gold in the Tierra del Fuego Archipelago (Dr. Hans Steffen, Santiago).

Zeitschrift.

The Passes of the Cordillera between the Argentine Republic and Chili, from 22° to 39° South Latitude (Prof. Dr. Ludwig Brackebusch)—The Mountain Forms in Southwestern Carinthia and their Origin (Dr. Fritz Frech)—The Place-Determinations of Columbus on his First Return Voyage, and his Leagues (Eugen Gelcich).

EDINBURGH.—*The Scottish Geographical Magazine.*

A Ride Through Persia. By Lieut. D. S. Buist, 2d Lancers, Hyderabad Contingent—The Physical Condition of the Waters of the English Channel. By H. N. Dickson, F.R.S.E.—The Distribution of Aquatic Plants and Animals. By H. B. Guppy, M.B., F.R.S.E. Deserts of Atacama and Tarapacá. By Mrs. Lily Grove—Some Notes on South Eastern Alaska and its People. By Prof. John J. Stevenson—Notes on the Construction of

Topographical Models. By J. G. Goodchild, H. M. Geological Survey—Exploration of the Rivers Tana and Juba. By Commander F. G. Dundas, R. N.—Madagascar. By Joël Le Savoureur, French Consul—The Climate of the Interior of Greenland. By Professor H. Mohn, of Christiania.

GOTHA.—*Petermanns Mitteilungen.*

Contributions to the Ethnography of Guatemala (Dr. K. Sapper, Coban)—Results of the Japanese Earthquake Statistics (Prof. Dr. A. Supan)—Geographical Distribution of Territory (Dr. Alexis V. Tillo)—Snow, Ice and Irrigation in the Western Part of North America (Prof. Dr. Fr. Ratzel)—British Acquisitions in the South Sea in 1892 (Dr. Ad. Vollmer)—A Journey to the Gold District of Eastern Nicaragua, performed in 1892 under instructions of the Nicaraguan Government by Dr. Br. Mierisch—The Law of Distribution of the Temperature of the Air over the Ocean (Dr. W. Zenker)—A Floating Island in the Atlantic Ocean (Dr. C. Ochsenius)—Droughts in China (W. Krebs and Prof. Dr. E. Brückner).

Ergänzungshefte 106, 107.

The Development of the Cartography of America to 1570 (Dr. Sophus Ruge)—The Population of the Earth (Herman Wagner and Alexander Supan).

LONDON.—*The Geographical Journal, including the Proceedings of the Royal Geographical Society.*
How Can the North Polar Region be Crossed?

By Dr. Fridtjof Nansen — Exploration and Character of Principal New Zealand Glaciers. By A. P. Harper, Hon. Sec. N. Z. Alpine Society—Lieut. Ryder's East Greenland Expedition, 1891-92 — Physiological Effects of High Altitudes. By Clinton Dent, F.R.C.S. Exploration of the Black Sea. By N. Andrusoff—Chitral—Treaty-Making in Africa. By Captain F. D. Lugard—The Fayum and Lake Moeris—To Lake Bangweolo and the Unexplored Region of British Central Africa. By Joseph Thomson—Journeys in the Benin Country, West Africa. By Capt. H. L. Gallwey, H. M. Vice-Consul to the Oil Rivers Protectorate—The Crossing of the Hispar Pass. By W. M. Conway—Mendez Pinto. By Stephen Wheeler—The Ruins in Mashonaland. By Henry Schlichter, Ph.D.—Ascent of Mount Demavend—Anglo-Portuguese Delimitation Commission—The Western Lowland of Ecuador. By Dr. Th. Wolf, late Government Geologist to the Republic of Ecuador—A Journey up the Baram River to Mt. Dulit and the Highlands of Borneo. By C. Hose, Resident of Baram District, Saráwak, Borneo—Expedition up the Jub River through Somali-Land, East Africa. By Commander F. G. Dundas, R. N.—Recent Explorations in the S. E. Congo Basin. By E. G. Ravenstein — Dr. Baumann between Victoria Nyanza and Tanganyika—The Permanence of Ocean Basins. By H. R. Mill,

D.Sc., F.R.S.E.—The Reclamation of the Zuiderzee. By Prof. P. H. Schoute—Map of the World, 1542—A New Map of Switzerland—Floods in Queensland. By H. O. Forbes—Distribution and Movement of Population in India—The Regulation of the Iron Gates—The Industrial Development of Nyasaland. By J. Buchanan, C.M.G.—The Construction of a Map of the World on a Scale of 1:1,000,000. By Prof. Dr. A. Penck.

PARIS.—*Société de Géographie, Comptes Rendus.*

Positions in Arabia determined from the Observations of Charles Huber, 1883–1884—Reconnaissance in the Tunisian Sahara—Letter from M. Dècle in Mashonaland—M. Gabriel Marcel on Some Little Known Documents relative to the Discovery of America—A Coast Canal in the United States—A Journey from Tiflis to India.—Tombs of Two Franciscan Missionaries of the 14th Century, discovered near Lin-Tsing Tshu, in China—The Transsahara Railway—Reception of M. Monteil—A Portrait of Columbus, ascribed to Sebastian del Piombo—Colonization among the Romans—The Algerian Sahara: Hassi-Inifel—M. de Brettes in Venezuela—Earthquakes in Java and Sumatra—Dr. Pichon's Travels in Anam—Siam.

ROME.—*Società Geografica Italiana, Bollettino.*

The Primitive Inhabitants of the Mediterranean (Prof. G. Sergi)—Expansion of the European

Race outside of Europe (E. Levasseur)—Missions in their Relation to Colonial Expansion (Marquis Volpe-Landi)—Legal and Moral Bonds between Emigrants and the Mother Country (Prof. A. Scalabrini)—Protection of Emigrants in Italy and in other Countries (Cav. E. Rossi)—Statistics of Migration within the Country (Prof. P. Sitta)—Pearl Fishery and Culture of the Pearl Oyster in the Dahlak Islands (Prof. A. Issel)—Foundation of Italian Colonial Banks (Cav. P. Corte)—Italian Emigration to America in its Relations to the National Economy (Count R. Magliano di Villar S. Marco)—On the Increase of Italian Commercial Exchanges with America (by the same)—An Institution to promote in Italy the Study of American Geography (by the same author)—On the Economical Relations to be established between Brazil, Uruguay and the Argentine Republic with Respect to Emigration (G. Careri)—Commercial and Other Relations to be established between Italy and Colombia (C. Vedovelli)—On the Criteria to be observed in the Classification of Mountain Systems in Geography (Prof. G. Marinelli)—On the Line of Division between the Alps and the Apennines, to be adopted in Instruction (by the same author)—On Geographical Instruction in Primary Schools (Prof. P. Porrena)—Prizes Awarded at the First Italian Geographical Congress—Botanical Excursion in the Habab Country (Dr. A.

Terracciano)—From Reyes to Villa Bella (Prof. L. Balzan)—Census of the Straits Settlements (Marquis F. de Goyzueta di Tovarena)—On Geographical Instruction in Secondary Schools and Propositions to improve it (Prof. C. Bertacchi)—On the Development of Geographical Studies in Normal Schools (Prof. E. Canevello)—On the Teaching of Geography in Universities with special Reference to professional Aims (Prof. G. Dalla Vedova)—Text-Books in Geography, and the Necessity of preventing the use of those which are unsuitable (Prof. G. Pennesi)—The Question of the Horary Gores at the Genoa Congress letter of (Prof. P. Tacchini)—An Unpublished Letter of Adriano Balbi—Preparatory Studies for the Fourth Decennial Census (Prof. G. Dalla Vedova).

VIENNA.—*Mittheilungen der Kais. Königl. Geographischen Gesellschaft.*

The Home of Aristotle, or the Peninsula of Chalcidice (Josef Adolf Brück)—The Bubis of Fernando Po (Prof. Ferdinand Blumentritt)—The Deep-Sea Explorations of the *Pola* in 1890–1892—The Climate of Sofia (J. Hann).

WASHINGTON.—*The National Geographic Magazine.*

The North American Deserts (Prof. Dr. Johannes Walther, *Tr.*)—The Alaskan Boundary Survey (Dr. T. C. Mendenhall, J. E. McGrath, J. H. Turner and J. E. Turner)—Collinson's Arctic Journey (Gen. A. W. Greely).

WASHINGTON LETTER.

WASHINGTON, March 25, 1893.

NAUTICAL SURPRISES.—The most reliable statistics show an average annual total loss by wreckage of 2172 vessels, with 12,000 lives, in the commerce of the world. The estimated value of the vessels and cargoes lost is about one hundred million dollars. These statements are to most people as surprising as another one attributed to General Dumont, of the U. S. Steamboat Inspection Service; viz., that the sailing vessels of the world carried a larger number of passengers, and at smaller loss, than the steam vessels.

On a *Wreck Chart of the North Atlantic Coast of America*, recently issued by the U. S. Hydrographic Office, are graphically shown for the period of five years, from 1887 to 1891, the localities where 956 vessels were wrecked, together with the positions of 332 abandoned vessels, of which 139 were frequently reported, and have their drift tracks plotted as far as the limits of the chart permit. The tangled tracks lie mostly between 30° and 40° N. Latitude, and, as might be expected, largely in the track of ocean steamers. They are interesting as showing the extremely erratic courses of these dangerous obstructions. The trend is eastward, but the gyrations approximating the American coast are towards every point of the compass. In addition to the 332 abandoned vessels, the *Monthly Pilot*

Charts and Weekly Bulletins show that there were in this same region and period 625 derelicts which could not be identified. One derelict drifted 310 miles in five thousand nine hundred and ten days. and was reported forty-five times. Another drifted 615 miles in about the same time, and was reported thirty-four times. There were thirty-eight collisions with the derelicts; an average of nearly eight every year. The unidentified include all vessels floating bottom up, floating hulks without masts, and abandoned vessels with masts standing. The largest numbers were reported in the months of October and November, and these trebled in five years. But this apparent heavy increase may have been the result of better methods in gathering the information. It will be observed that the 625 unknown with the 332 known derelicts make a total of 957 during five years, or an average of sixteen for each month. It is estimated that the average time a derelict remains afloat is about thirty days. But this is probably an underestimate, because many such are undoubtedly not reported, or not seen. The *Pilot Chart* for February, 1893, shows 45 afloat in the North Atlantic, 25 of which were in the vicinity of the tracks of the transatlantic steamers.

Derelicts in the North Atlantic mainly originate on the coast of the United States, the most prolific sources being the regions adjacent to Maine, Massachusetts, Delaware, Maryland and North Carolina. The International Marine Conference which met in Washington in 1889 discussed the danger of derelicts to life and property, and the unanimous report of the United States delegates was:

"It is earnestly recommended that a steam vessel of about 800 tons displacement be built, which shall be especially fitted for and adapted to the service of taking the ocean in bad weather, for the purpose of blowing up or otherwise destroying wrecks and derelicts, or bringing them into port; such vessel to be built under the direction of and attached to the Navy Department, and that particular attention be paid to her strength, and to the strength, size, and character of her boats, owing to the fact that such vessels are required principally just after a storm, when the seas are still running high and when no ordinary boat could take the sea. Special design in the hull is required on account of being subject to rough weather and heavy seas, and on account of having frequently to tow vessels submerged. For this latter reason extra fittings for towing should be added."

Millions upon millions have been expended on the "new navy," but the appropriation of the comparatively very small sum that would be required to give vivification to the humane suggestions of the Marine Conference, and perhaps be the means of *saving* (not destroying) lives and millions worth of property, has not yet been found among the Acts of Congress. In one or two instances a government vessel has been detailed to destroy a dangerous wreck.

The Hydrographer is charting a Gibraltar steamship route. The route which this office mapped out and recommended as the great sailing route to the continent of Europe is now followed by all the great steamships. Corresponding results are expected when the Gibraltar route is formulated. The Hydrographer has

received and is still receiving many valuable reports from masters of vessels and others who have been cruising along these proposed routes in view of their definite adoption. The eastern route, which is nearly a direct line from Boston or New York to Gibraltar, is favorably indorsed by all. Going westward, the high powered steamers generally prefer the northern great circle route. The medium-powered steamers prefer a southern route west, that is, a direct line to lat. $34^{\circ} 30'$ N., long. 65° W., thence north-westerly. Others advise a route more southerly—to Madeira, to Bermuda, to the United States port.

The path of the total eclipse of the sun, April 16, is graphically shown in the *Pilot Chart* for March. The Marine Meteorologist, Mr. Everett Hayden, says this great astronomical event has certain features of special interest to the science of marine meteorology, and earnestly requests masters of vessels and observers who may be within the limits of the visibility of this eclipse to make reports of their observations. Scientific expeditions have been prepared to observe this eclipse, which is visible to South America, the larger part of Africa, Southern Europe, and intermediate Atlantic Ocean, being total along a line drawn through South America and across the Atlantic into the Sahara, Africa.

PRODUCTION AND DISTRIBUTION OF THE AGRICULTURAL PRODUCTS OF THE WORLD.—Mr. Dodge, the statistician of the Department of Agriculture, has been recently engaged in the collation of official statistics of all countries in the world relating to the production and

distribution of the principal products of agriculture. It has been deemed a matter of supreme importance to collate, translate, coördinate and arrange the data of recent years, that some more definite idea of national supply and consumption could be obtained to relieve the confusion existing among agricultural and commercial writers on these points. Ninety-two countries are represented, and ten consecutive years ; and never has there been so comprehensive and complete a collection as to extent of geographical area represented and continuity of annual statements.

As the work includes only official statistics, except incidentally in the brief analysis of results, its purpose is mainly to give comprehensiveness and lucidity to the disjointed and chaotic mass of such data. It aims to reduce to order and harmony the most valuable official statistics of agricultural exploitation, and confines within narrow limits the commercial quest for normal production of those countries which have no records of production, and few, if any, available facts of distribution. It is a long step in the progress of inquiry as to the actual supply and consumption of each individual country, revealing peculiarities of agricultural possibility, adaptations of climate and soil to the healthful growth of different plants, dietetic tastes and habits of different nations, and many adventitious conditions controlling the development of rural industries and the distribution of their products.

ELECTRICITY IN AGRICULTURE.—The Department of State in 1892 instituted an inquiry on the use of electricity in different parts of the world as a power in the

propulsion of farm machinery and implements, and in the propagation of plants. It is not surprising that as far as known there are but four countries outside of the United States where experiments in this direction have been made, viz., England, Germany, France and Belgium.

Some interesting experiments on the effect of the electric light on the growth of plants were carried out by the late Sir William Siemens, at Sherwood, England. The apparatus consisted of

(1) A vertical dynamo machine.

(2) A regulator or lamp, constructed for continuous currents, with two carbon electrodes. The light was equal to 1400 candles.

(3) A 3-horse Otto gas-engine as motor.

The conclusions reached were as follows :

(1) That electric light is both efficacious in producing chlorophyll in the leaves of plants and in promoting growth.

(2) That a light centre equal to 1400 candles, placed at a distance of $6\frac{1}{2}$ feet from growing plants, appears to be equal in effect to average daylight in February ; but more economical effects can be attained by more powerful light centres.

(3) That plants do not appear to require a period of rest during the twenty-four hours of the day, but make increased and vigorous progress if subjected during day-time to sunlight and during the night to electric light.

(4) That the radiation of heat from powerful electric arcs can be made available to counteract the effect of night frost.

(5) That while under the influence of electric light, plants can sustain increased stove heat without collapsing, a circumstance favorable to forcing by electric light.

(6) That the light is efficacious in hastening the development of flowers and fruit. The flowers produced by its aid are remarkable for intense coloring, and the fruit both for bloom and aroma.

(7) That the expense of electro-horticulture depends mainly upon the cost of mechanical energy, and is very moderate when natural sources of such energy, as waterfalls, can be made available.

Some observations made by Dr. Schübeler of Christiania had already confirmed the conclusions that plants are able to grow continuously, and that when under the influence of continuous light they develop more brilliant flowers and larger and more aromatic fruit than when under the alternating influence of light and darkness.

In Germany, a marked increase in yield resulted from the use of copper and zinc plates connected through insulated wires with the positive and negative poles of a battery.

In Paris, two conservatories at the Paris exhibition were lighted by electricity. The gardener thought the plants and flowers thus lighted had a more lively air than those dependent upon gas or any other light than the sun or the moon. In consequence of this belief the electric lights were kept burning continually, and it is said that this perpetual light gave extra vigor to the plants, but that the expense was greater than the results obtained. Attempts have been made to pass electric currents in buckets where seeds were washed prepara-

tory to sowing in order to destroy microbes invisible to the naked eye. It has been claimed that the germinating power of the seeds was thus increased.

In Belgium and in England electricity has been successfully employed as a motor for thrashing and dairy machines.

GEOLOGIC ATLAS OF THE UNITED STATES.—A definite plan of publication of the great geologic atlas of the United States, prepared under the direction of Major Powell, having been determined, the work of issue is going on with considerable vigor. Five atlases have appeared, each bearing the name of the most prominent locality in the area covered. They are, the Hawley (Mass.) sheet, the Chattanooga and Kingston (Tenn.) sheets, and the Sacramento and Lassen Peak (Cal.) sheets. Each atlas has a cover with an index map on the face showing the location of the district described on the geologic sheets. The cover holds eight sheets. The first is explanatory, that is to say, it contains a general explanation of the maps for the whole country, and will be repeated in all the atlases. The second has an outline of the geological history of the region of which the map makes a part. This sheet will also be repeated with maps of the same region. The third sheet presents a geographical and structural account of the immediate area included in the map. Then follow four colored maps, topographic, geologic, economic, structural. In some cases, when the economic resources are of such importance as to warrant it, a sheet of mineral resources will be added, showing the location of mines, quarries, coke-ovens, smelters and furnaces, as well as mineral areas.

Of course the basis of these geologic maps is the topographic sheets of the United States Geological Survey, covering an area of about 600,000 square miles, already described in these pages.

The following statement, by States and Territories, of the geological survey by the United States up to June 30, 1892, was prepared by W. J. M'Gee, and read at the October meeting of the American Institute of Mining Engineers.

States and Territories	No. of Sheets		Area Surveyed in Sq. Miles
	Wholly in State	Partly in State	
Alabama.....	2	2	5,500
Arizona.....	1*	—	14,000
California.....	7	—	14,875
Colorado.....	—*	—	2,150
Delaware.....	—	—	50
District of Columbia...	—	2	70
Florida.....	2	—	850
Georgia.....	3	1	3,900
Iowa.....	3	—	700
Kansas.....	—*	—	100
Kentucky.....	—	1	100
Louisiana.....	6	—	1,500†
Maryland.....	13	6	5,000†
Massachusetts.....	21	2	5,500
Michigan.....	—*	—	300
Montana.....	3	—	10,000
Nevada.....	—*	—	25
New Jersey.....	2	—	500†
New Mexico.....	—*	—	6,500
New York.....	—	2	300
North Carolina.....	—	2	500
Oregon.....	—*	—	1,000
South Dakota.....	—*	—	1,000
Tennessee.....	5	3	9,500
Texas.....	6	—	6,000
Utah.....	2*	—	9,000
Virginia.....	1	4	9,000
Washington.....	—*	—	2,000
West Virginia.....	—	2	750
Wisconsin.....	4*	—	2,000
Wyoming (including Yellowstone National Park)....	4	—	1,000

* Special sheets (*i. e.*, not coinciding with regular topographic atlas sheets) have been completed.

† Including water areas.

Besides the finished surveys and maps which are alone comprised in the statements and tables here given, the areas covered by reconnoissance, partly preliminary but largely detailed, is many times greater, extending into every State and Territory (including Alaska), representing all the natural classes and groups of rocks and covering one-fifth or more of the national domain. More than two-thirds of the geological field-work of the Bureau has yet to be mapped.—*Magee.*

BUREAU OF AMERICAN REPUBLICS. It is gratifying to know that the bulletins of this Bureau, which are compiled from original information, without regard to previous publications on the same subjects, are recognized as official and accurate, and have been the cause of revisals of chapters concerning those countries in several of the popular encyclopedias and geographies. What have been considered standard publications in English have, in many cases, been found absolutely unreliable in their statements concerning the Central and South American countries. The demand for the bulletins by commercial organizations and applicants directly interested in commerce with the countries to which they refer has exceeded the supply. The general hand-book for 1893 is in press; also hand-book for Nicaragua, Bolivia and Ecuador. These, with those already issued, cover eight of the South American republics, and eight more are in preparation. That there is an increased desire among the merchants and manufacturers of the United States to participate in the trade of South America would seem to be demonstrated to a remarkable degree by the demand, not only

from seaports, but from manufacturing towns, for the commercial directories, tariffs, and customs regulations of the several republics which this Bureau has had printed for gratuitous distribution.

The Bureau is rapidly accumulating a valuable library of statistical, geographical, commercial and general information that will be of great use to the public. Perhaps the best commentary on the value of the institution is the fact that similar bureaus have been established in England, France, Germany and Belgium in order to counteract as far as possible the influence of this agency.

The work of preparing the catalogue of commercial terms recommended by the International American Conference has been advanced. The English portion is in type. This catalogue will embody about 35,000 terms commonly used to describe articles of commerce between the United States and other American republics, with their equivalents in Spanish and Portuguese arranged alphabetically. Many of the terms do not appear in any Spanish or Portuguese dictionary. The expense of this publication being too great to justify free distribution except to customs, consular officials and public libraries, the public printer is authorized to sell the work at a price covering the cost of publication.

The exports from the United States to South America, including Mexico, last year showed an increase of 85 per cent, since 1885, when the endeavor to extend our trade southward began. The increase of postal communication with these countries by sea since 1889 has been very marked, in many cases from fifty to seventy-five per cent.

All the American republics, with possibly one exception, and most of the colonies will be represented by a full display at the Chicago Exposition. The appropriations exceed \$2,000,000; and it will be the first time in history that they have all been assembled at any Exposition.

PUBLICATION OF THE CENSUS.—According to the latest regulations the reports of the eleventh census (1890) will consist of

- Digest of leading statistics. 8°.
- Compendium. 8°.
- Population. 4°.
- Manufactures.
- Agriculture.
- Wealth, debt and taxation.
- Farms, homes and mortgages.
- Mineral resources.
- Transportation.
- Insurance.
- Vital statistics.
- Statistics of special classes.
- Fish and fisheries.
- Educational and Church statistics.
- Pauperism and crime.
- Social statistics.
- Alaska.
- Indians.
- Atlas.

Of these, the volume on Mineral Resources, and the first volume of Wealth, Debt and Taxation have been printed. Some of the subjects treated will require more than a single volume. As compared with the census of 1880, separate reports on the following topics have been omitted :

- Cotton production.
- Forestry.
- Building stones.
- Mining laws.

Water power.
Wages, prices, strikes, etc.
Culture and curing of tobacco.
Flour-milling processes.
Cattle, sheep and swine.
Factory system.
Chemical products and salt.
Machine tools and wood-working machinery.

And the following will be new :

Digest of statistics.
Farms, homes and mortgages.
Insurance.
Educational and Church statistics.

There will be special reports or monographs on clay and pottery products, coke and glass, cotton goods, distilled spirits used in arts, electrical apparatus and appliances, manufactured gas, iron and steel, mixed textiles, printing and publishing, salt, ship-building, silk, wool and worsted.

Fifty thousand copies of the Digest and Compendium have been ordered, thirty thousand of the volumes on Population and Agriculture, and ten thousand of each of the other reports and Atlas.

Notwithstanding the very sensible effort made to continue the Census Bureau as a permanent organization, and thereby retain services trained at great cost, the office was abolished by last Congress, and the terms of all employ  s expire at the end of the year 1893. The records and unfinished work are to be turned over to the Secretary of the Interior, who is authorized to employ a sufficient force, for a period not longer than one year, to complete the publication, that is to say, to the end of the year 1894.

When the question of creating a permanent Census Bureau was before Congress, Mr. Francis A. Walker

remarked : "Taking the census is very much like raising an army of volunteers at the beginning of the war. From my own experience I know that you are almost certain to get something else than good work at the start, and by the time the force becomes trained and efficient the work is nearly all completed. The additional expense of such a system is very great. I believe it would be greater than the expense of maintaining a moderate census force, a statistical force through the decade, and there is no question that the results would be very much greater; I won't say more economical, though I believe so. There are two kinds of economy : one of spending less money, and the other of getting more for your money ; and the latter kind of economy can be practised to a very high degree by a permanent bureau." And Mr. Thomas Donaldson, of Philadelphia, aptly said that the pay of a superintendent of a *permanent* census bureau would be not so much for what he does as for what he learns not to do.

BOUNDARY SURVEYS.—The Coast and Geodetic Survey has still in hand the survey of the territory adjacent to the boundary line of the United States and Canada between Alaska and British Columbia, and the northwest territory of Canada, with a view to the ascertainment of the facts and data necessary to the permanent delimitation of the boundary line, in accordance with the spirit and intent of the existing treaties in regard to it between Great Britain and Russia, and between the United States and Russia.

A joint commission is engaged in determining the questions affecting the water boundary between the

United States and Mexico. Another commission is marking the boundary line between the United States and Canada in Passamaquoddy Bay, opposite and adjacent to Eastport, Maine.

DEATH VALLEY.—It will be remembered that in 1891 an exploration of this region was made under the direction of Dr. C. Hart Merriam, of the Department of Agriculture, with the co-operation of the United States Geological Survey and the Signal Service. Prof. Harrington, chief of the Weather Bureau (successor of the weather branch of the Signal Service), has already published the meteorological contribution to the results of the exploration.* Dr. Merriam has now ready for the press † his Narrative, and the Scientific Results of the expedition. His collaborators are several naturalists, including Jordan, Gilbert, Fisher, Stearns, Stejneger and Riley. As it has been held that the animal and plant forms of this region are comparatively few, the "results" are looked for with lively interest. It is expected also that the work of the topographer will give greater consistency and exactness to questions of the elevation or depression of the valley.

THE VALUE OF HAWKS AND OWLS.—Dr. Merriam has overwhelmingly demonstrated the importance of an accurate knowledge of the economic status of our common birds and animals. Bulletin No. 3, Division of Ornithology and Mammalogy, Department of Agriculture, prepared under his direction by Dr. A. K. Fisher,

* Weather Bureau Bulletin, No. 1.

† North American Fauna, Nos. 6 and 7.

is an exposition of the relation to agriculture of the hawks and owls of the United States.

The conclusions reached are based on the critical examination by scientific experts of the actual contents of about 2700 stomachs of these birds, and consequently may be fairly regarded as a truthful showing of the normal food of each species. "The result proves that a class of birds commonly looked upon as enemies to the farmer, and indiscriminately destroyed whenever occasion offers, really rank among his best friends, and, with few exceptions, should be preserved and encouraged to take up their abode in the neighborhood of his home."* Dr. Fisher says unflinchingly (1) that owls are among the most beneficial of all birds, inflicting very little damage on the poulterer, and conferring vast benefits upon the farmer. (2) That all hawks, with possibly one or two exceptions, are to some extent beneficial to the farmer. State laws, he says, passed for the destruction of hawks and owls, and offering a bounty for their heads are very effective either for good or evil. One of the counties of Pennsylvania paid out over \$5,000 for scalps of "birds of prey." In the light of the foregoing facts it will readily be understood how long a time it will take to replace these birds in case their services are wanted. There is no doubt that this State and others which have passed similar laws have made a serious mistake; for it is indisputable that the opinion about hawks and owls, so widespread and popular, is not well founded. The economic position of these two birds is well summed up in the following paragraph. Speaking of owls, Dr. Fisher says: "Their

* Dr. Merriam.

eyesight, unlike that of hawks, which hunt by day, is by no means so defective by daylight as popularly supposed, but is keenest in the early hours of evening and in early morning. Hunting thus in dim light their food consists largely of those animals which hawks do not trouble at all, or destroy only in small numbers. The work of owls thus supplements that of hawks and materially assists in preventing an undue increase of many obnoxious rodents. Again, though owls are somewhat migratory, they are far less so as a class than hawks, and hence in winter, when the latter have left the northern States for warmer climes, they remain at home and carry on their incessant warfare against injurious rodents."

Of the seventy-three species and sub-species of hawks and owls found in the United States, only *two* (the Sharp-shinned and Cooper's Hawk) need really be taken into account as enemies to agriculture. Of 159 stomachs of the former which were examined, six contained poultry or game birds; ninety-nine, other birds; six, mice; five, insects, and fifty-two were empty. Of the latter, 133 stomachs were examined. Thirty-four contained poultry or game; fifty-two, other birds; eleven, mammals; one, frog; three, lizards; two, insects; and thirty-nine were empty. Over 2,000 stomachs of all the other species were examined and found to contain only $3\frac{1}{2}$ per cent. poultry or game birds. A catalogue of the pests that these farmer's assistants devour includes mice, gophers, shrews, skunks, squirrels, rats, weasels, moles, chipmunks, spiders, adders, centipeds, snakes, grasshoppers, lizards, beetles, dragon flies, frogs, toads, locusts; to which

should be added an occasional old hen or a tough chicken.

The habits of some of these hawks and owls are so interesting that I cannot refrain from adding a few notes.

The Marsh Hawk annually destroys vast numbers of mice. Grasshoppers and crickets are particularly sought after by Swainson's Hawk. Dr. Merriam has estimated that at least 200 grasshoppers are consumed daily by one hawk; and in the course of a month a flock of 165 individuals, which is a small estimate of the number actually seen together in various localities feeding upon grasshoppers, will destroy 1,000,000 adult insects—a benefit to agriculture which no farmer can fail to appreciate. The Prairie Falcon follows ground squirrels relentlessly. In the rabbit-infected portions of the West the Great Horned Owl destroys immense numbers of these rodents. The little Screech Owl is indefatigable in its work of destroying mice and insects, and is to be particularly commended for its efforts in destroying the English sparrow. A large proportion of the food of the Barred Owl consists of rats, mice, rabbits and squirrels. In the West the Barn Owl feeds largely on pouched gophers—the most destructive mammals which inhabit this country. In the South it lives on cotton rats, and at other places on the common rat. The red-shouldered hawk, which shares with the red-tailed hawk the odious appellation of “hen hawk,” eats everything within reach—mice, birds, snakes, frogs, fish, grasshoppers, centipeds, spiders, crawfish, earth-worms and snails. Hasn't he a right to an occasional chicken?

The twenty-five colored plates from drawings by

Ridgway, which accompany the monograph, afford ample identification of the various species of these predatory birds.

THE SIX NATIONS.—A monograph on the Six Nations, formerly the "League of the Iroquois," has been prepared for the Census Bureau by Thomas Donaldson and General Henry B. Carrington.

The Six Nations of New York comprise the Cayugas, Mohawks (Saint Regis), Oneidas, Onondagas, Senecas and Tuscaroras. Formerly known as the Five Nations, or League of the Iroquois, they became the "Six Nations" in 1715 by the admission of the Tuscarora Indians from North Carolina, and are now located on five reservations in New York and one in Pennsylvania.

It will surprise most readers to learn that the League, since the advent of the European race on the American continent, never had an available fighting force of more than 2500 men. But their fighting capacity was phenomenal, and, coupled with rapidity of movement and power of concentration, gave the impression of a vast number of warriors. "They made peace or war with equal facility, conquering and absorbing tribes, and getting the control and government of the country from the Carolinas to the lakes on the north and the Mississippi on the west. The Mohawk war-whoop was the terror of aboriginal life, and the signal fires of the Iroquois League, illuminating the hills and valleys of the Atlantic coast, meant danger to the outlying tribes" * Mr. Donaldson says that the astonishing fact is pre-

* Donaldson.

sented by the census of 1890 and the statistics of non-resident Iroquois tribes that the League is stronger in 1890 than it was in 1660, when first estimated by competent Europeans. In 1660 it was estimated at 11,000; in 1890 it is 15,870. The reservations of the Six Nations in New York and Pennsylvania comprise 87,967 acres valued at \$1,810,699, and "property" valuation at \$1,309,493 additional.

The monograph contains an account of the Iroquois League, its territory, government and social customs, and interesting facts concerning its past history, present condition, religion, industries, morals, education, vital statistics, traditions, etc., several ancient and modern maps, and a large number of illustrations.

A SCIENTIFIC CLEARING HOUSE.—There is a Joint Commission, composed of delegates from six of the scientific societies of Washington, viz, the Anthropological, Biological, Chemical, Entomological, National Geographic, and Philosophical. The functions of the Commission are advisory, except that it may execute instructions on general subjects and in special cases from two or more of the societies participating. The Board meets at irregular intervals and forms a very important connecting link between the varied, and not always harmonious, interests of the associations. Col. Garrick Mallery is president and Marcus Baker secretary of the Commission. The latter gentleman has just prepared the fifth edition of the directory of the six associations represented in the "clearing house." Mr. Baker has done this work so often that he does it well. He gives in one list, alphabetically arranged, the customary and

full name and the residences of the membership of all the societies. The names of honorary members are not included, only the active resident and non-residents. The greatest increment in membership was in 1892, partly due, however, to the admission of the Entomological Society into the union during that year. The National Geographic Society, which is the youngest of the six organizations, has a much larger membership than any of the others. The summary of names in the directory (active members only) is :

Anthropological,	222
Biological,	195
Chemical,	97
Entomological,	109
Geographic,	682
Philosophical,	250

1555

One individual, W. J. McGee, has a membership in all the societies. Another, Maj. J. W. Powell, in all but one. Seven hundred and sixty-two reside in Washington and 497 live elsewhere.

The oldest society named in the Directory is the Philosophical Society of Washington ; organized March 13, 1871, "for the purpose of free exchange of views on scientific subjects, and the promotion of scientific inquiry among its members." There were 44 original members. The present number is 250. Not incorporated. It has published 11 volumes of *Bulletins*. President, G. Brown Goode. Past presidents have included Simon Newcomb, Asaph Hall, Dr. J. S. Billings, C. E. Dutton, T. C. Mendenhall.

The next oldest organization is the Anthropological Society of Washington; organized February 17, 1879, "to encourage the study of the natural history of man especially with reference to America." The 17 original memberships have increased to 340. It is incorporated, and has published three volumes of *Transactions*, one volume of *Abstract of Transactions*, and 21 numbers of a quarterly journal entitled *The American Anthropologist*. Otis T. Mason is President.

The Biological Society, the third in order, was organized December 3, 1880, "to encourage the study of the biological sciences." There were 45 original members. Present membership, 195. Not incorporated. It has published 7 volumes of *Proceedings*. President, C. V. Riley. Past presidents include Dr. T. N. Gill, G. Brown Goode, W. H. Dall, C. Hart Merriam.

The Chemical Society, the fourth, was organized January 31, 1884, "for the cultivation of chemical sciences pure and applied." There were 31 original members; now 97. Not incorporated. It has published 8 *Bulletins*. President, Fred. P. Dewey.

The Entomological Society, the fifth, was organized February 29, 1884, "to promote the study of entomology in all possible bearings." Original membership, 26. Present membership, 109. Not incorporated. Has published one volume of *Proceedings*, and part of the second. President, C. V. Riley.

The youngest organization, as already remarked, has the largest membership. The National Geographic Society was organized and incorporated January 27, 1888, "for the increase and diffusion of geographic knowledge." The first membership was 165. At the

present date it is 682. The Society has published 4 volumes of the *National Geographic Magazine*. President, Gardiner G. Hubbard.

Included in this Directory of active membership are found the names of Cleveland Abbe, Henry Adams, Cyrus Adler, Alexander Agassiz, A. Graham Bell, J. S. Billings, Elliott Coues, Charles P. Daly, E. M. Galaudet, Theodore Gill, D. C. Gilman, G. Brown Goode, A. W. Greely, Asaph Hall, Thaddeus William Harris, F. A. Hassler, E. S. Holden, George Kennan, S. P. Langley, Garrick Mallery, T. C. Mendenhall, Simon Newcomb, E. C. Pickering, J. W. Powell, Elisée Reclus, S. H. Scudder, D. P. Todd, Warren Upham, F. A. Walker, and Robert De Courcy Ward.

The Microscopical Society of Washington, organized February 7, 1884, 46 members; Women's Anthropological Society of America, 77 members; and the Geological Society of Washington, founded February 52, 1893, with 108 members, are not yet included in the scientific union. The latter will be in the near future.

The organization of a series of surveys and their final co-ordination into the present U. S. Geological Survey, has made Washington for many years not only the principal centre for geologists of this country, but also one of the principal centres in the world so far as contributions to that branch of science are concerned.

Heretofore the geologists in Washington have presented their communications for local discussion, chiefly before the Philosophical Society, but as the number of communications increased, there was a demand for greater opportunity for the presentation and discussion of geological papers than the Philosophical Society

afforded. As a result a new society, called the Geological Society of Washington, was organized.

The journals and bulletins of the various societies appear to furnish sufficient opportunity for the publication of papers read before the Society, so that for the present it will not undertake to publish the papers presented. It will probably issue one bulletin each year, containing the address of the retiring president and such other matters as the council directs.

As this is its first year the list of officers elected is appended :

President,	.	.	G. D. Walcott.
Vice-Presidents,	.	{	S. F. Emmons,
		{	W. H. Holmes.
Treasurer,	.	.	Arnold Hague.
Secretaries,	.	.	{ Whitman Gross,
		{	J. S. Diller.

Members at Large of the Council : G. F. Becker, T. M. Chatard, George H. Eldridge, G. K. Gilbert, G. P. Merrill.

THE "AMERICAN UNIVERSITY," incorporated at the last session of Congress, is the Methodist institution which, under the inspiration of Bishop Hurst and others, has recently acquired valuable real estate holdings in Washington. The incorporators include many of the most prominent men to be found in the American clergy and laity of that denomination, and two women—Mrs. John A. Logan and Mrs. Elizabeth J. Somers, a very successful manager of a school for young ladies, located here. The charter provides that two-thirds of the incorporators shall at all times be mem-

bers of the Methodist Episcopal Church. The privileges granted are very wide—practically unlimited—and there is no limit to the amount of property that may be acquired by the corporation.

COMMANDER TANNER.—All those who are acquainted with the splendid record of Lieut. Commander Z. L. Tanner in marine exploration will be delighted to learn of his promotion to be Commander in the Navy.

DR. GEORGE VASEY, Botanist to the Department of Agriculture, and for many years connected with that institution, died recently in this city at the age of 72. Dr. Vasey was probably the best authority on American grapes, and contributed largely to the literature of the Department with which he was many years connected, and to the periodical scientific literature of the country. His best known works are "Grasses of the Southwest," "Grasses of the United States," "Grasses of the Arid Regions," and "Grasses of the Pacific Slope, including Alaska."

THE JERUSALEM RAILROAD.—The first railroad ever built in Palestine and Syria was recently opened. Much popular interest was manifested on the occasion, and the ancient city is said to have showed a little of the life and bustle which characterize cities in the western world.

The road is fifty-three miles long and lies between Jaffa (or Joppa), the seaport of Palestine on the Mediterranean, and Jerusalem, and cost \$2,000,000. The ties, part of the rails and coaches came from France.

The engines (5) were made in Philadelphia by the Baldwin Locomotive Works. Coal is brought from Cardiff and from Belgium. The price paid for the Jerusalem station, which is a mile from the city, indicates that speculation in "suburban" lots is not confined to the western hemisphere. Twenty-five thousand dollars were paid for about eight acres of land, which a few years ago sold at one dollar per acre. The principal owners of the road reside in Paris, where are also the headquarters of the company. The price paid for labor in construction was about one-third the rates prevailing in this country. The time-table calls for three hours and a half between the terminals, and the fare is \$2.50—about five cents per mile. As Consul Merrill remarks, "The opening of such a road in this country is an event of more than ordinary interest when one considers the history of this land and its backwardness in all that pertains to modern and material civilization."

The American and British consuls at Jerusalem have been investigating the exaggerated estimates that are widely circulated of the number of Jews now in the Holy Land. As it is continued to be asserted in print that there are 100,000 to 150,000 Jews in Palestine and 50,000 in Jerusalem alone, when the entire population of that city does not amount to the figure last named, it is necessary to reaffirm the results of these consuls' investigations, namely, "that 42,000 or 43,000 represent pretty nearly the Jews now in Palestine," and that the number in Jerusalem cannot be much over 25,000 and must certainly be considerably less than 30,000.

Transient Americans to the number of four hundred

and fifty visited Palestine in 1892. This is about forty per cent. of all the travellers that have been recorded as arriving in that year. "Pilgrims" are not reckoned as tourists; of the former class there are from 5000 to 10,000 annually.

The only systematic exploration that has been carried on recently has been done by an American acting for the Palestine Exploration Fund—an English society.

STRAITS SETTLEMENTS.—According to a recent census of the Straits Settlements the population of that region is ascertained to be ,137,970. Americans do not go there to engage in trade, there being less than 20 in the whole population, and the bulk of these are teachers in an Anglo-Chinese school. The United States consular agent at Penang is the only American engaged in business, although our interests in that region are greater than those of all other nations put together, with one possible exception. H.

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(Authors are responsible for the contents of their respective papers.)

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THE FINGER LAKES OF NEW YORK.

BY

ALBERT P. BRIGHAM.

Lakes belong clearly within the domain of what is sometimes called Geographical Geology. Their geographical interest is not small. Their variety in size, from the smallest natural ponds up to inland seas, their diversity in shape, depth and altitude, and their great numbers, are facts which strike the attention and suggest inquiry. From an economic point of view they afford abundant materials for consideration as bearers of traffic, as regulators of floods, as centres of resort, and for their effects upon climate. Studied geologically, lakes open up an important body of facts. Primeval continents could not have progressed far in their growth before lake making conditions began to appear. Viewed individually, lakes are affairs of short life. Geological forces are always making lake basins, and such basins are constantly being destroyed by filling with sediment, or by the cutting down of their rims; or, the basin may remain, while the lake is destroyed

by desiccation. On most competent authority,* the numerous lakes of the Scottish Highlands are but a fraction of what have formerly existed. The variety of forces whose action aids in bringing lakes into being, has suggested the most convenient classification of lakes, that is, according to their origin.† Thus we have a relatively small group of lakes of volcanic origin, occupying old craters or valleys obstructed by lava. More important is the group of orographic lakes, or those due to deformation of the earth's crust. Here belong the lakes of the Great Basin, and, according to some, our Great Lakes, and Champlain. In limestone countries, solution lakes are not uncommon, and this agency has been operative in enlarging many basins, due primarily to other agencies. Landslip lakes have been noticed by Lyell,‡ and Gilbert records the formation of small lakes behind landslip terraces.§ River and shore lagoons must be named in any full classification, while glaciation, in one way or another, is responsible for the existence of most lakes. Here we have the ice-dam or temporary type, as Agassiz and Iroquois, the kettle-hole group, which is often made to include what Geikie calls "Lakes of the Plains,"| and which he defines as lakes that "lie in hollows of the covering of detritus left on the surface of country when the ice-sheets and icebergs retreated." Thus they differ from

* Geikie, *Scenery of Scotland*, p. 241.

† See "Classification of Lake Basins" by Prof. W. M. Davis, *Proc. Boston Soc. Nat. Hist.*, Vol. XXI., 1882, p. 321. The several kinds are ranged under the general heads, "Constructive," "Destructive," "Obstructive."

‡ *Principles of Geology*, II., p. 129, 11th ed.

§ *Lake Bonneville*, pp. 83, 84.

| *Scenery of Scotland*, p. 227.

the kettle-hole ponds, which are thought to have frequently originated by the sliding of debris from stranded bergs or ice masses isolated by retreat of the main sheet. Other glacial lakes are due to morainic dams in valleys, and yet others, beyond dispute, as it seems to me, are in whole or in part, rock basins, due to glacial excavation. The lakes by morainic dams and by excavation introduce us to those lakes of New York, which will have chief attention in this paper.

For convenience, we may regard the lakes of the State as comprised in three groups: first, the Great Lakes, Erie and Ontario, to which we may add Champlain. Second, the Adirondack Lakes. Disposed, at first sight, in extreme disorder, any map will, on scrutiny, disclose a measure of system, a prevailing north-east by southwest range, suggesting an orographic origin of the mountain valleys in which they lie, though glacial forces have doubtless mainly originated their basins. These lakes offer some sharp contrasts with those later to be considered, as in their irregularity of form, the boldness of the surrounding topography, the greater amount of lake filling, and their relatively great altitude, ranging from 1500 to more than 4000 feet above the sea level.

We shall now undertake some study of the third great group of our larger lakes, the north and south lakes lying between the Ontario-Mohawk depression and the southern tier of counties. We may regard the region as a unit or single plateau, extending from the Catskill Mountains to the Genesee River, a plateau whose summits are about 2000 feet above the sea level, and whose general surface is much of it above 1000

feet. Or we may, better for our present purpose, consider the tract as composed of two inclines, one sloping northward to Lake Ontario and the Mohawk River, and the other southward, bearing the head-waters of the Chemung-Susquehanna. Upon both faces of this east and west ridge or plateau, and continuing across the divide, is found that remarkable series of valleys, whose history is essentially the history of the lakes in question. These valleys, owing to their number and uniformity, have attracted attention ever since the topography of the Empire State began to be studied. Vanuxem, in his volume of the final report on the geology of New York, takes up the problem, and well illustrates the struggle which good and trained observers had, fifty years ago, in their effort to reduce refractory facts to order, without the help of ice.*

If we begin at the east and go to the western limit of the State, we may call the lakes the Otsego-Chautauqua series, or we may limit our view to those lying between Otisco and the Genesee River, and then we shall have the Otisco-Conesus group, or, as commonly known, the Finger Lakes of New York.

Concerning these latter the principal topographic facts are as follows. They lie on the northern slope of the plateau, or in the hydrographic basin of Lake Ontario. From Otisco to Canandaigua they have a concentric trend northward, and to this series Onondaga and Oneida may be added, whatever may be said of the

* See Geology of Third District, pp. 235-238 where, at the close of his discussion, Vanuxem says: "Patient investigation, in time, if true, will harmonize their results; for truths only apparently conflict with each other, the real conflict being solely in the minds of those occupied with them."

genesis of the latter lakes. All these have their outlet through the Seneca and Oswego rivers, while Honeoye, Canadice, Hemlock and Conesus trend slightly west of north and send their waters to the Genesee. It is at least suggestive that the little Silver Lake west of the Genesee trends north-eastward, and likewise finds an outlet to the same river. The recency of these outlets is perfectly evident, whether flowing sluggishly out on the surface of the drift, as in the case of Cayuga, or having cut shallow cañons for part of their course, as in the case of more elevated lakes like Silver or Skaneateles. In length the lakes vary from three or four miles, as Silver and Canadice, to about fifteen in the case of Canandaigua and Skaneateles, and to above thirty for Seneca and Cayuga. The latter two show a maximum width of over three miles. The greatest depth of Seneca is 618 feet, and of Cayuga 435 feet. The deepest parts of Keuka measure about 175 feet, of Skaneateles, 275 feet, and of Canandaigua, 240 feet. As to altitude, it increases almost uniformly as the size of the lakes decreases, from Cayuga at 378, to Canadice at 1099.

Closely related to the lake basins are the intervening ridges, which rise from an almost undifferentiated plain at the north to bold swells at the south, having, from a distance, an extremely uniform appearance, and rolling down to the surface of the lakes like arcs of great cylinders. Sometimes the tops and upper flanks of these ridges are diversified by long, gentle, drum-loidal swells, telling unerringly the story of glacial moulding.

Cutting down across the lower flanks are innumer-

able ravines, entering the lake basins at right angles, and lining off the open farm-lands with parallel strips of forest. The map published by the engineering department of Cornell University records 223 of these lateral streams entering Cayuga lake, of which but 13 enter the northern third, a most instructive fact in tracing the topographic development of the region. South of the lake region, about coincident with the line of hill summits and the water parting of the valleys, is the terminal moraine of the second glaciation, another important fact as regards the history of the excavations. The lake belt may be said to join the flat, milder and richer northern regions of western New York, with the high, cold and poorer uplands of many of its southern counties.

All the larger lakes, except Keuka, have their northern terminus in or near the Helderberg zone of rocks, while their southern ends are commonly in the Upper Devonian sandstones. Much of the soil at the north, therefore, is debris of the Niagara, Salina and Helderberg rocks, which, compared with Hamilton and Portage soils and the increase in altitude, readily explain the economic diversity of the northern and southern counties. About the lakes and upon their ascending hillsides the lakes act as reservoirs of heat to delay the autumn frosts, and so combine with conditions of soil to favor the fruit industries of Keuka and other lakes. The scenery of these lakes demands at least a passing notice, and would amply reward the attention of the student or the tourist. Never bold, save in some of the cañons like Watkins, it yet should not be overlooked or despised because it is so accessible,

and surely not by those who share the writer's enthusiasm for the varied resources and beauty of the Empire State.

We shall come now to some considerations bearing on the genesis and history of these basins. Some of the facts to be accounted for are as follows:—What is the origin of the north and south valleys? Why do the Finger Lake valleys have a concentric trend? What has transformed parts of the valleys into depressions capable of holding water? Why do they lie in an east and west series, in rocks of the same horizons and terminating northward on about the same parallel? Why do they occur in such numbers in western New York, and have a limited development farther east? Why do the lakes narrow and at the same time deepen toward their southern ends? The last consideration is worthy of further note before we proceed. The average of a line of cross soundings one mile from the north end of Skaneateles Lake is 34 feet, one mile from the south end is 106 feet. For the north end of Canandaigua Lake we have 17 feet, for the south end 164 feet. Similar averages for the larger lakes four miles from either end give for Cayuga 11 feet at the north and 275 feet at the south; for Seneca 149 feet at the north and 400 feet at the south. The meaning of these facts will be discussed further on.

We naturally divide the history into three chapters and inquire how much of the physical evolution of this region is pre-glacial, how much is glacial and inter-glacial, and what features are post-glacial.

The pre-glacial development of topography carries us so far back that we are compelled to speculate rather

than arrive at conclusions. Granted the initiation of the Laurentian depression, probably by orographic movement, and we have the beginnings of an erosion which would in time strip off the upper Paleozoic beds, consume and bevel off their northern outcrops, and give us an approach to the incline which slopes off into Lake Ontario. Just where this long erosion left the line of water partings we cannot tell. And how far the cols were developed which now unite the valleys across the ridge, is a question which students will answer according to their belief or non-belief in the digging power of glaciers. My own impression is that the opposing Susquehanna and Laurentian stream systems had worked back upon each other until their head waters were thoroughly interlocked, and had in many cases merged into each other, forming cols which should afterward be vigorously rimmed out by ice streams.

If we inquire as to the form of these pre-glacial valleys, we naturally refer to a non-glaciated area for light upon the question. Here we learn that when a stream has nearly or quite reached its base level, it begins to wander from side to side, giving rise to flat-bottomed valleys, often bordered by lines of cliff, formed by under cutting and removal of the talus.*

The Finger Lakes in cross section often give evidence of such old flat-bottomed valleys, whose profiles have not been destroyed even by important glacial excavation. Soundings of 150 to 300 feet are not very uncommon within 500 feet of the shore of the larger lakes, offering a natural extension of the sharply de-

* See "Driftless Area of the Upper Mississippi Valley," Chamberlin and Salisbury, 6th Annual Report U. S. Geol. Surv., pp. 225-228.

scending slopes above the water's edge, which are characteristic of the southern half of the lakes. I believe that Seneca, Cayuga, and the Genesee mark such deep, broad-channelled, pre-glacial trenches. Thus the present altitude of Cayuga Lake is 378 feet. The level of the old valley was probably lower, owing to drift filling at the north, though this might be offset by glacial erosion. The altitude of Seneca is 441 feet, while the old valley was probably quite as deeply cut as that of Cayuga. Compare the Genesee, whose alluvial bottoms are but 595 feet above tide at Mt. Morris, which is fully forty miles from Lake Ontario. The remaining and important question as to pre-glacial topography relates to the direction of the streams, which many have held to have discharged southward into the Susquehanna system. I believe the facts to be almost wholly opposed to this view, and shall give my reasons in discussing the glacial history. I am, however, prepared to believe that the locus of the watershed has been slightly shifted southwards. It is natural to think that a heavy mass of ice would grind powerfully on the stoss side (if I may use the word in this way) of a ridge crossing its track, and push the materials over, causing the crest to migrate in the direction of the flow.

We turn to the glacial chapter in this history. I ask you to keep in mind the conditions which a long pre-glacial development had wrought—a northward slope as at present, creased by important valleys, bearing streams northward into the pre-glacial representative of Lake Ontario, be it river or lake. Remember that we have a country free from drift, without foreign

bowlders, with soils mainly of the class known as residual, or products of rocks decaying in place.

What changes did the ice work upon such a surface? To anticipate, we may say that the ice brought it nearly to its present form, for the aggregate of post-glacial modification, though highly interesting, is not extensive. My conviction as to the amount of glacial change is, that it was extensive, but not revolutionary. Such change, it is well understood, is capable of discrimination into two elements, sculpture and modelling, carving of consolidated rock, and moulding of loose materials. The Finger Lake country illustrates both phases of glacial work to perfection. The obliteration of the valleys northward, and the gathering up of the several outflowing streams into the sluggish Seneca River, would of itself be sufficient evidence of a glacial filling which had erased the features of pre-glacial drainage, while the smoothed contours and drumlin swells of the ridges which lie between the lakes prove with equal certainty that ice is something more than a soft brush, gently grazing the face of a country.

South of the lakes and about coincident with the line of water partings, runs the moraine of the Second Glacial Epoch. The relative position of this moraine and of the lakes appears to be an important fact, as I shall show, in the genesis of the basins. That the moraine deeply clogged the valleys of streams which once flowed southward, and created basins of the morainic dam type, is a theory to which I think the following facts are fatal. First:—The general and pronounced slope of the country toward the north. I can form no conception of a region whose general slope is

in one direction, and whose main streams are in another. Base level is first attained about the lower course of streams and slowly recedes to the neighborhood of their sources. We have no evidence of such excessive oscillation as would be needed to change the attitude of the district, and that the slope has been reversed by glacial erosion of more than 1000 feet of rock, from the neighborhood of Geneva and Auburn, is a proposition which few would care to accept.

Second:—The vast glacial filling required in the valleys south of the lakes, if they are to be held in place by morainic dams. Thus Pine Valley, the point of divide south of Havana, is 865 feet above tide. The deepest recorded sounding of Seneca Lake marks 177 feet below tide. Professor Chamberlin does not express a judgment in the matter, but quotes the commonly held opinion of an original southern flow, and then says: "If this be true, and no allowance be made, on the one hand, for drift deposits in the bottom of the lake, nor, on the other, for glacial corrasion, the total depth of the drift under the crest of the moraine must exceed 1000 feet, and this depth, approximately, must continue far down the Chemung-Susquehanna valley." *

The same is true of Cayuga, if its channel was dug by a south-flowing stream. Essentially the same is true of Owasco and Skaneateles, for although less deep, the water partings to the south are higher. Those who can, may believe that a series of valleys is blocked by 1000 feet of loose materials along the line of a moraine, which, though massive, is not massive enough to make a strong showing across the intervening ranges of hills.

* Third Annual Report U. S. Geol. Surv., p. 355.

Third :—The lakes quite uniformly open out to greater widths northward. Cayuga Lake at Ithaca is a little over one mile wide, heading between high, strong walls. At Aurora it occupies a broad, shallow basin, and is above three miles in width. The same figures will serve for Seneca at Watkins and Dresden ; while at Havana (three miles south of the lake) the width of the valley is less than a mile. Moreover, if these lakes are held in by morainic dams at the south, there ought to be signs of morainic topography in the lake bottoms and about Ithaca and Watkins, and no possible amount of post-glacial lake filling could have so thoroughly effaced it. We may, therefore, dismiss the notion of southward flow and valley-filling and seek a theory of the lakes more accordant with the topography.

Setting aside dislocations and solution, we have either buried pre-glacial channels to the north, or glacial excavation, or both, as legitimate hypotheses. Let us test them, and see first how far the theory of drift-clogged channels at the north will help us.

Take Skaneateles Lake. Its surface is 861 feet above the sea. Its greatest depth is nearly 300 feet. Its outlet runs through the village of Skaneateles and for nearly a mile northward runs practically on the surface of the boulder clay. At the Lake, the Syracuse water engineers have excavated to a depth of 20 feet, half in made soil, half in undisturbed till, with no sign of rock bottom. But between one and two miles north the outlet in its rapid descent has cut through the till into the Marcellus shale. The amount of drift barrier at the north end of Skaneateles Lake is less than 50 feet. Over 200 feet of the present depth of

the lake, therefore, appear to lie in a rock basin, for there is no evidence of a buried channel. The old pre-glacial stream must have had about the present course.

We will apply the same test to Owasco Lake. This sheet of water is ten miles long. The city of Auburn is situated in the valley of its outlet two miles from the foot of the Lake. Here again the outlet passes over the surface of the drift for some distance, then passes gradually into a gentle sag, and one mile from the lake has made a channel 25 feet deep, with till cliffs having the usual angle of 30° or 35° . In the south part of Auburn the till cliffs are 50 to 60 feet high, and then the stream passes the railway depots and the State prison on a rock floor of jointed limestone blocks. The evidence here also is against the existence of a buried channel. I am not informed as to the depth of Owasco Lake, but whatever it be, only from 50 to 60 feet of it is due to drift blockade, and for the rest, the rock-basin theory must mainly account.

For Cayuga Lake we have no data. The altitude drops to 378 feet, or but 131 feet above Lake Ontario. The country about the north end is flat, and the outlet passes sluggishly out through the Montezuma marshes. From the general importance of the Cayuga valley and its approach to a local base level, as well as from buried channels at Syracuse and Geneva, I infer that much of the depth of Cayuga Lake—one-half or more—is due to drift barrier, not of the morainic sort, but a plastering full of the ancient channel.

For Seneca Lake we have the case more clearly before us. Hall notes * the absence of outcrop of the

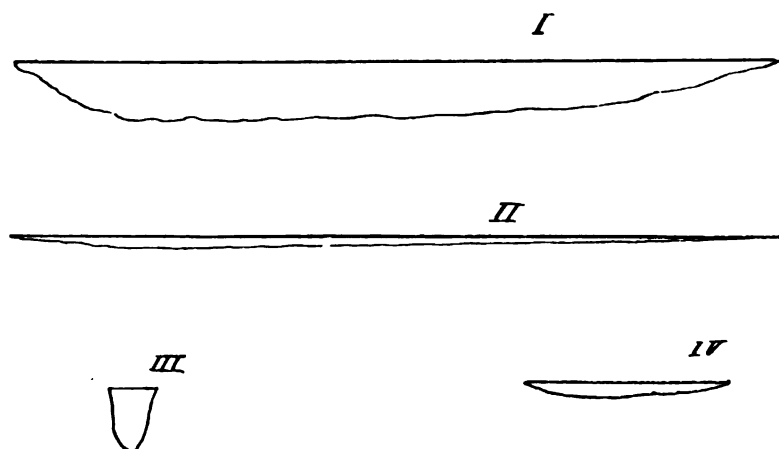
* *Geology of the Fourth District*, p. 164.

Corniferous limestone for several miles east and west of Geneva, and suggests that the valley of Seneca Lake once extended farther north than at present. We have also present information of a boring at Geneva, in which rock was reached at a depth of 240 feet below the surface of Seneca Lake.* If this marks the maximum depth of the old erosion, we still have 378 feet of the depth of Seneca Lake to be accounted for.

Here we have a residue of depth, plus a certain unknown but probably small thickness of bottom sediments, for which glacial excavation is the most satisfactory explanation. This is not the place to argue the digging power of glaciers. I do not urge it upon any who, like a recent rather severe critic of the United States Geological Survey, are ready to confess that the glacial period "is a fiction." Nor do I ask for a glacial erosion adequate to scoop out such basins as those of Ontario or Michigan, which, however, I do not deny. Rather do we seem driven to postulate ice work sufficient to change a well-deepened stream valley into a basin whose depth is, after all, very slight when we consider its superficial extent. Sceptics are apt to be merry at the expense of believers in rock basins by ice; they are "great believers in soft places," etc. How can ice scoop debris out of a pit hundreds of feet deep, they say. Such objection arises largely from that exaggeration of the vertical scale which we are so slow to outgrow, in delineating elevations and depressions, as mountains and sea bottoms. I give an illustration in the following diagrams. Fig. 1, drawn in the same

* Glaciation in the Finger Lake Region of New York, by D. F. Lincoln, *Am. Jour. Sci.*, Oct., 1892, p. 301.

proportion as the longitudinal section of Seneca Lake upon the Cornell University Engineering Department map,* would give the lake a depth of between three and four miles. Fig. 2 is still so much exaggerated in vertical scale as to give the lake a depth of 3000 feet. A section could be drawn true to scale by swelling slightly the under side of a straight line. Fig. 3 is a



cross section of Seneca Lake in its deepest part, as shown upon the Cornell map, while Fig. 4 gives the actual cross-section. It will be seen, therefore, that we do not require the ice to rise out of a steep-walled pit, with its load of debris, but that the amount of scoop is relatively very slight.

* A method which engineers find it needful to use, but which geologists and geographers should discard when possible.

If it still seems too much to ask an erosion of 200 to 300 feet, it is possible that a further consideration may have some bearing, viz., crust oscillation. Recovery from northern depression would have some tendency to deepen the basins, especially toward their southern ends, which is precisely where our demand for cause is the heaviest. Professor Shaler has suggested that such a movement may have developed the marsh lands already spoken of as extending from the foot of Cayuga Lake.*

I propose now to inquire whether the outline of history given is accordant with certain further facts, and whether in any measure it answers the queries already set forth. To review briefly, we suppose the basins to be a composite resultant of valley erosion, glacial scoop and drift barriers, with perhaps a slight element of orography.

One of the problems presented is the deepening of the lakes southward. As above indicated, I cannot consider this as due to pre-glacial southward flow. Narrowing of the ice between contracting valley walls increased the vertical pressure and hence intensified the erosion. For this law of glacial action we have so good an authority as Geikie.† Again, the deepest part of the lakes is not far behind the terminal moraine, and was therefore for a long time the seat of severe ice action. On this phase of the case I find the following summary of the view of Böhm on "Die Hochseen der Ostalpen." ‡ "The Alpine lakes are divided into two

* Tenth Annual Report, U. S. Geol. Surv., p. 266.

† See "Scenery of Scotland," p. 232.

‡ Am. Jour. Sci., 3d Series, vol. xxxiii., p. 431.

groups, the valley and the mountain lakes. The former are in general large and occupy the valley on the circumference of the former glacial region, where the ice streams at the time of maximum glaciation could exert their greatest force." This is precisely the attitude of the Finger Lakes in relation to the moraine. It may be noted that Otsego and Schuyler are likewise north of a somewhat morainic belt. Added to the above considerations is the fact of southward dip of the beds out of which the basins have been dug, and the further fact that the beds (Marcellus and Hamilton) are relatively soft, as compared with the limestone below, and the massive sandstones above and southward. The deepest lakes were made by the heaviest and most persistent ice streams of the larger valleys. It must be said here, however, that we are not prepared to answer the query, why lakes in some valleys and not in others, as for example the Genesee, which marks a deep pre-glacial furrow, and whose valley must have been the scene of vigorous glaciation. The relation to the moraine determined in part the east and west arrangement of the series. It seems to have been further determined at the north by the resistant horizon of the Helderberg, upper and lower, which the ice could not breach, except as pre-glacial rivers had sawed it in two, as at Cayuga and Geneva. The high, massive upper Devonian sandstones probably also in some measure combined with the limit of glaciation in determining the southward extension of the lakes. The preponderant number of lakes in Western over Eastern New York may be accounted for by the existence of the Ontario depression, the consequent heavier ice flow, than across

the Adirondacks and the Mohawk valley,* and the existence of a wide northern slope between the Ontario sag and the Ontario-Chemung watershed.

Does the topography accord with our medium estimate of the amount of glacial work? The view held is that the topography has been modified but not revolutionized by ice, that the northern slope, the valleys and ridges were pre-glacial, and that valleys were deepened, ridges rounded, and some transverse valleys filled by ice. If corrasion was not excessive, pre-glacial tributary valleys should, in cases, appear. The depression from Penn Yan to Dresden is such a pre-glacial tributary to the Seneca valley, moderately mantled with till, through which and into the underlying rocks the outlet of Keuka Lake has cut in moderate degree. Most of the larger pre-glacial tributaries may also be supposed to have entered to the northward, where the country was well progressed toward base-level, and whose lower courses may now be concealed by drift.

The questions relating to the post-glacial history are more easily answered. As with other recent history, there has been less time for the complication of causes and results, and the features in question stand out sharp and unmistakable.

The recency of the outlets is marked. As already described, the outlets of Skaneateles and Owasco have not yet had time to cut back through two miles of till with a thickness of 50 feet. They flow out over the

* Note the following law, stated by Prof. R. D. Salisbury, Geol. Surv. of N. J., An. Rep., 1891, p. 58: "The depth of moving ice is one of the determinants of its velocity, and because of the greater depths of ice in valleys its motion here was most rapid, and its abrading action powerful."

surface of the drift as if they had started but yesterday. The same is true of the outlet of Seneca, above Seneca Falls, while at Penn Yan it is very plain that the water has backed up through the shallow eastern arm of Keuka Lake and found its way over the drift into an old valley running eastward.

Hundreds of ravines mark courses of small streams entering the lakes, efforts to perfect a new system of drainage for the intervening regions. In some cases fifteen or twenty to the mile can be counted along the steeper borders of the lakes. Watkins' Glen is the best known of these post-glacial cañons, although it enters upon the main valley a short distance above the head of Seneca Lake, but not, however, above the original extension of the lacustrine area. Three miles to the south on the same or west side is Havana Glen. Upon the borders of Seneca Lake some miles from its head are Glen Ora and Hector Falls. Numerous glens with falls enter upon Cayuga Lake, as Eagle Cliff Falls by the campus of Cornell University, and Taghannock, the highest waterfall in New York, a few miles to the north of Ithaca. Largely post-glacial also are the cliffs of rock seen so extensively on the lake shores, and forming, especially on the east shore of Cayuga Lake, one of the finest natural geological sections in the world.

The remaining changes may be placed under the head of lake filling. No perceptible change has been made in the area of the lakes by cutting down of outlets, for, as has been seen, such cutting has not yet reached up to the lakes themselves. In this they agree with a recent statement regarding the lakes of the

Adirondack wilderness.* The Finger Lakes, however, do not agree with the Adirondack lakes in rapid development into vleys or natural meadows. The only approach to an exception is at the head of several lakes, as the level tract on which Ithaca and Watkins are built. These areas must be due to filling, and doubtless result from the silting up of the always shallow southern ends, by materials brought not only from the hills directly above them, but also by debris contributed from all the side ravines as far south as the divide, these materials being brought down by the inlets and building the land area farther and farther to the north.

Along the margin of the lakes are many points, in area from a fraction of an acre up to several acres. They are, of course, delta deposits made by lateral streams, in some cases assuming the form of true alluvial cones. They are utilized as steamboat landings and sites for villas, and add to the beauty of the lakes, but are not as great in extent as one would expect. Why there should be less filling than in the Adirondacks it is hard to see, especially as the soil is largely bare of forests and exposed by agriculture. The cones do not appear to affect the soundings to any distance, which is doubtless due to the fact that the transporting streams are torrents which discharge little solid matter except in the spring, and then of such large fragments that they come to repose near the shore.

The bottom filling I regard as small in amount. The soundings fairly show that there is little or no morainic accumulation at the bottom, and we probably have a

* See an interesting account of "Lake Filling in the Adirondack Region," by Prof. C. H. Smyth, Jr., *American Geologist*, February, 1893.

moderate depth of fine silt mantling the rock contours of the several depressions. At a distance of 500 feet from the foot of Skaneateles Lake, the Syracuse water engineers have found 6 to 8 feet of fine, smooth lacustrine clay. As they progress with dredging toward shore they will pass into the underlying rock or till, and the depth of lacustrine filling at that point will become evident.

Still, on the whole, the amount of filling in the Finger Lake region cannot be considered unimportant or the rate a slow one, for the geologist is, of right, lavish of time. In his mode of reckoning, therefore, lakes are evanescent products of world-making energies. They were born yesterday and will perish to-morrow, but not without filling their place in the economy of nature and adding, in varied ways, their contribution to the resources of man.

HONDURAS.

BY

E. W. PERRY.

As far from New York as Denver is lies a country which has of late been often mentioned in the news columns of American papers. It is said to be passing through one of those spasms which were, a few generations ago, so common in Latin America as to give the rest of the world a belief that there was scarcely time to recover from one before another began.

The Republic of Honduras extends some 400 miles from east to west, its northern coast line following closely the sixteenth degree of north latitude, midway between New Orleans and the equator. It is one of the few regions of earth which have a truly temperate climate. Tempered by the northeast trade winds from the Atlantic, which sweep across the country every day, from the Caribbean Sea to the Pacific Ocean, 200 miles away, the mean temperature for many years in succession has been 75° F., the range being from 60° to 96°.

As a whole, the country is mountainous, open and sunny. The hills are covered by a growth of long-leaved pines, beneath which are grasses that afford pasturage for some half a million cattle. On the high mesas grow rice of superior quality, barley and coffee. Among the irregular mountain ranges are large and fertile valleys that yield two or more crops each year,

and might be easily made, by irrigation, to give a constant succession of fruits and grains.

On the Atlantic slope large plains rise gently from the sea to the base of the mountains. In the extreme northeastern corner of the Republic the plains are from 60 to 80 miles in width. Across these plains flow a number of rivers of goodly size, some of them navigable by steamboats for many miles. Chief among them is the Patuca, fitly called the Mississippi of Honduras. From the Caribbean to the Portal del Infierno, or Entry of Hell, it bears the name of Patuca. From that narrow and deep cañon to its source in the far interior of Olancho the river is known as the Guayape. Near the city of Juticalpa, capital of Olancho, the Guayape is joined by the Lepiguare and by the Jalan, both bringing from the quartz hills gold which has for many a generation given employment and spending money to the natives, and has of recent years tempted thousands of good pounds sterling from the purses of Englishmen.

The Jalan rises in the edge of the Department of Tegucigalpa, and winds through large valleys in which are several towns of considerable size. Chief among these, perhaps, is Talanga, some 36 miles from Tegucigalpa, the national capital.

Twelve miles below Juticalpa the Rio Telica enters the Guayape from the west, draining the valleys of Manto, rich in coffee, hides and sugar, and having great wealth of copper, silver and gold locked in her hills; of Jano and of Guata, both smaller than the valley of Manto, but rich in like natural stores. Below the junction of the Telica and the Guayape the Gual-

lambre adds its flood to the larger stream, which, a few miles farther down, breaks its way through a high dam of lava and other volcanic rock, and, with a grand rush, becomes the Patuca. Below the Portal are the Raudales Caoba, or Mahogany Rapids, which are the most difficult obstacle between the Portal and the sea. The Guampu, the Cuyumel, so called because it is a favorite resort for a fish of that name; the Amacwas, or river of honey-bees; the Waspresini, or swift water; the Guineo, or river of bananas; and the Malawas, or river of the breasts, are the other tributaries of this noble river, which can be easily navigated by steamboats as far as the Waspresini, at least 125 miles.

The Roman, or Aguan, rises in the mountains that are the boundary between the Departments of Yoro and Olancho. For many miles it is broad and deep, and drains a wide and exceedingly fertile valley where millions of bunches of bananas might be easily grown every year. The forests along its banks have given to commerce many thousand tons of mahogany, and doubtless contain more than have been taken from them. The Aguan enters the Caribbean at a point 25 miles east of the spot where Columbus first put foot on the American continent. He soon afterward landed at the mouth of Black River, 70 miles farther east, after beating against the trades with his ramshackle old tubs until patience was exhausted and courage almost gone. The Black is navigable for several miles. English colonies were established two or three times at the Black River, and a fort was built there by the British Government. A number of plantations of sugar, coffee, cacao and cocoanut palms were estab-

lished near, and the Province of Victoria bid fair to become prosperous and happy. But that and other encroachments by the English on Central American territory led to the friendly and rather significant intervention of the United States when Marcy was Secretary of State. Fort Wellington was abandoned, the colonists were removed, and the region settled again into a savage state.

Twelve miles east from Black River is the Rio Platano or Plantain River. It is unknown to the geographer, but has some features of interest. An exploration and map have recently been made by Harry W. Perry, who tells of the discovery of a number of granite rocks standing in the stream, and bearing on their surfaces deep carvings of strange figures. One of these works of the art of a people long buried in the oblivion of ages is a beautifully cut scroll of curious and intricate design. Another is a human face showing plainly the peculiarities of Chinese physiognomy. Far up this river lie the ruins of a city, and not far from it is a cave wherein lie the stone hammers, the bowls and the metates of granite, on which was ground the corn for the tortillas that were the food of mankind from California to Patagonia, long ages before white cutthroats brought civilization and drunkenness, Christianity and rapine to that fair land.

Each of the rivers named flows through forests in which mahogany, Spanish cedar, rosewood, *lignumvitæ*, ebony and other precious woods abound, and India rubber, Brazil wood, logwood and other dyestuffs are found. It was from the regions whence they come that the best sarsaparilla and cacao or cocoa known to com-

merce have been brought. The valleys they drain can be easily irrigated by their waters, and thus be made to support thousands of people where now one gets a sometimes scanty subsistence; for those sunny, elevated and deliciously cool vales do sometimes suffer from lack of rain enough to carry the crops of maize, upon which the masses depend for bread, to maturity.

Among the ranges of mountains that separate Honduras and Guatemala rises the Chimilicon River. Flowing eastward it runs parallel with the north coast of Honduras, until it reaches the great valley of Sula and turns to the north. Before it reaches the valley it receives the waters of the Santa Barbara, a river which has, if the statements of the natives be true, an unusual course. They say that the stream has its origin in the south end of Lake Yojoa, from which it flows to the southward a short distance and disappears beneath a mountain, to burst forth again not far from the village of Taulebé and make a grand sweep around to the westward, then north to join the Chimilicon. I give credit to the story because I know that the Agua Azul, the Blue Water, gushes out, a small river with a strong current, from the hills on the east side of the lake and soon tumbles into that remarkable body of water.

Yojoa is a curious lake. It lies some 2200 feet above the level of the sea, between a gentle slope on the eastern side and abrupt mountains on the west. Like most mountain lakes, it is often swept by a sudden squall that makes sailing a risky pastime. The lake swarms with fish, and game abounds in all the woods and on the plains about. Its waters are shallow, particularly at the southern end, where are large reedy

marshes. From those marshes flows the stream mentioned, that is lost beneath a hill, and from the northern end flows another river that runs along about a mile as a well behaved river should, and then it too plunges under a range of mountains and is lost to human sight until it comes to light, miles away, a goodly river, the Rio Blanco, and glides gently down to join the Humuya, which drains the great valley of Comayagua, and the Sulaco, which comes from near the head waters of the Jalan. The Sulaco, the Humuya and the Blanco form the Ulua, which runs parallel and very near to the Chimilicon until lost in the Caribbean Sea.

As a whole, Honduras is an open, sunny, well grassed and well watered land, swept every day by cool breezes. Her mountain tops grow good rice, maize is produced in every corner of the land and is the staple breadstuff; from fields planted years and even generations ago, and never since replanted, cane exceeding in richness of its yield of sugar the best grown in the Southern States, has been harvested continuously. Cotton of a staple said to be equal to Sea Island is gathered, year after year, from plants that have grown into stout trees 20 feet or more in height. Coffee is grown in quantities great enough to supply the home demand, and to leave considerable for export. She has a long list of indigenous edible fruits unknown to millions of people of northern climes, and to these she adds bananas, coconuts, pineapples, oranges, lemons, limes and others commonly seen in American markets. Her few peaches and apples are wretched seedlings, and are seldom if ever allowed to ripen on the tree, but are eaten green and are even more abominable to palate than they

would be if ripened. But the blackberries which grow wild on the mountains are of great size and most delicious in flavor to one from the fields of the North.

The banana is the most important of all agricultural productions of Honduras. Although only a few patches of bananas are to be found on the coast, one and a quarter million bunches, or fully \$870,000 worth, are exported per annum. If all the land suitable for banana growing within ten miles of that coast were planted with this fruit, the crops would yield an average net profit, at present prices, of more than \$100,000,000 per year.

Mineral deposits of great richness have been found in nearly every part of Honduras. Silver mines have given millions of dollars' worth of that metal to the crown of Spain in payment of the "king's fifth," and the mines are still worked. Gold is found in the quartz veins and in the placers of the Atlantic slope, large deposits of copper and iron exist, and considerable beds of coal have been discovered near the north coast. Phosphate beds also exist close to that coast.

Scarcely a square league of the Atlantic slope of the country, covering about four-fifths of the whole republic, is without streams which afford unlimited water power. The configuration of Honduras, its situation between two great oceans, the open, dry character of the land whence these streams flow, and the relation the whole bears to the moisture-bearing trade winds, warrant the belief that the rainfall must continue practically unchanged even though all the forests should be in time cleared away.

The climatology of Honduras is peculiarly favorable

and pleasant. The days are of nearly equal length throughout the year and the nights are fully ten hours long. There are what are popularly termed the dry seasons and the rainy seasons, but the latter term conveys to the average mind an erroneous impression. A more correct idea would be given by saying that the rainy season is one in which rains fall, and the dry season is one in which few showers, or none, are seen. Labor in the open fields is seldom stopped by rains, as these usually come in the late afternoon and night, and the mornings are sunny and comparatively cool. The trade winds sweep over the land every day, and the temperature is always delightfully refreshing in the shade, the range being from 60° F. during the northers, to 97° F. in exceptionally hot hours on the lowlands or in sheltered valleys. But such breathless hours are rarely known.

As would be expected of a country so entirely free as Honduras is from swamps, and swept every day by pure winds from over the ocean, there are few severe diseases and fevers are usually light and easily managed. Pneumonia and other inflammation of the lungs, diphtheria and scarlet fever and similar ailments are unknown, and ague, typhoid and kindred disorders are rare and yield easily and quickly to remedies commonly used in the United States for the cure of such maladies. Still such ailments are sometimes seen, particularly during the rainy seasons, among people who live in exposed places. In a broad sense it may be said that no attention is paid to sanitation, and there is cause for wonder that the people are so free as they are from deadly diseases.

Honduras has a population of 263,073 males and 168,844 females, or 5.17 males and 4 females per square mile of her territory. The census shows an increase of 24,628 in population since the year 1881. Of the people, 69,871 are aborigines and 362,046 are of mixed Spanish and Indian blood or of foreign birth. In speech, manner and dress the people are quiet. They are frugal, industrious, and hospitable to the limit of their powers. The honesty of the masses wins praise from all decent Americans and Europeans who know them. The speculative spirit has little hold on them, and bankruptcy, embezzlements and robbery are practically unknown among them. Credits are long and payments slow, as in all countries where transportation is difficult, and merchants know personally and perhaps intimately the character and standing of most of their customers.

Hondurians are remarkably peaceful and law abiding. Murder by Hondurians is almost unknown. Freedom of speech and worship are guaranteed by the constitution and insured by public sentiment, as are the right of suffrage, of liberty and of property. For many years members of congress and the presidents have been elected lawfully and peacefully, under the provisions of a constitution which resembles that of the United States. The legitimate government has proved itself strong enough to promptly quell all attempts at unlawful disturbance. Pauperism is almost unknown. In some of the larger cities people are permitted to beg on Saturday, but few take advantage of that permission.

Progress in Honduras has been much retarded by

the enormous bonded debt, incurred for the purpose of constructing a railway that was to extend from the Atlantic to the Pacific, across the Republic. This debt, including interest to January 1, 1892, is :

Issued.	Amount of Issue.	Rate of Interest.	Amount, Jan. 1, 1892.
1867.....	£78,800	5 per cent.	£282,871
1867.....	900,700	10 per cent.	10,990,579
1869.....	2,176,570	6 2-3 per cent.	10,288,309
1870.....	2,242,590	10 per cent.	19,182,231
Totals.....	£5,398,660		£40,743,991

Honduras has recently granted to enterprising parties several concessions for building railroads within her borders, but all have been abandoned, probably because the projectors learned that the bonds above mentioned are a first mortgage on the domains and forests of the Republic, on the general revenues of the State, and especially on the custom-house duties of Amapala, on the Pacific. There is in the original contract a clause by which the government agreed that it would not grant the right to any to build another road from ocean to ocean. It is difficult to induce capitalists to invest in such enterprises. Before they will do so it will probably be necessary to secure the liquidation of the bonded debt of \$198,015,797.50 now hanging over the country, a debt that may well be called hopeless, since the entire revenue of the Republic does not much exceed \$8,400,000 per annum, while its necessary expenses are \$8,385,000. The indebtedness is equal to \$458.45 for every man, woman and child in the land, while the total average exports from the country average only \$6.21 per capita. If the entire amount of the exports could be devoted to paying off

the debt, and if interest thereon should cease now, 74 years would be required to accomplish the task. Stated in another way: this debt is equal to \$4,205.50 per acre for every acre of land, public or private, in the entire country. The marvel is not that Honduras has not progressed more rapidly, but that she has managed to keep so creditable a place as she maintains among the Central American republics. This position is shown by the subjoined table:

Countries.	Population per square mile.	Exports per capita.	Imports per capita.	Total Foreign Trade per cap.
Costa Rica.....	8.94	\$20.80	\$18.96	\$39.79
Guatemala.....	34.11	3.80	2.87	6.67
Honduras.. ...	9.17	6.21	5.79	12.00
Nicaragua.	7.56	3.25	4.58	7.83
Salvador.....	91.97	7.57	4.59	12.17

A significant fact is that all the Central American republics are importing less than they export. Another fact is that in average population per square mile and in average of exports and imports per capita these five countries stand ahead of Mexico.

One serious obstacle to progress in Honduras has been an almost entire lack of means for easy and rapid transportation. Even the mails are carried on the shoulders of men, and all freight is carried on the backs of mules. To remedy this the government has recently made contract for the construction of 200 miles of wagon road to connect the national capital with the head of steamship navigation of the Rio Patuca, and by that stream with the Caribbean Sea. It is expected that these roads will lead to the early development of old and new mines by making it possible to take to them heavy machinery and by transporting from them

ores and concentrates without the enormous expense now necessary in doing that work. Agriculture will be promoted, large areas of fertile land will be brought into market, and great tracts of forest now practically inaccessible will be penetrated, thus making available the wealth of high-priced woods with which they abound. This will increase the purchasing power of the people and thus swell the revenues of the government.

NICARAGUA :
STUDIES ON THE MOSQUITO SHORE
IN 1892.

BY
COURTENAY DE KALB.

I.—HISTORICAL SKETCH.

Low-couched along the Caribbean Sea, with the Nicaraguan Andes rearing their forest-covered walls behind, reposes a narrow strip of sand and jungle which has borne the brunt of centuries of diplomatic juggling. Serving as the cat's-paw for Great Britain in her earlier schemes to menace Spain, and in her later efforts to capture the only possible Atlantic terminus of a trans-Nicaraguan ship-canal, Mosquitia was finally abandoned to the misery of an abnormal political status, involving independence without power and dependence without succor, when the risk of war with the United States rendered her more a source of danger than of profit to her former British "ally." Pampered and petted for generations, encouraged and aided by the English in depredations upon her Spanish neighbors, she now finds herself hampered by those she formerly despised, and whom she now hates bitterly. Discontent, vexation, enmity, are working as a ferment in the people of Mosquitia. It may come to nothing, and it may produce a state of things in which her sovereign, Nicaragua,



JAMES CUTHBERT, *Sec'y.*
CHAS. PATTERSON, *Pres't.*

GEO. HAYMAN, *Head-Man.*
ROBERT HENRY CLARENCE,
Chief of Mosquitia.

EDWARD MCCRAE, *Head-Man.*
J. W. CUTHBERT, *Atty-Gen.*

would be bound to preserve the integrity of her domain, —by military repression if need be. None could blame her, and yet the plain necessities of the case would impel an infraction of that cunning piece of British diplomacy, the Treaty of Managua. The infraction would be equivalent to annulment, and that would revive all anterior claims, which means that a British protectorate over Greytown and its vicinity could be re-established in the name of the Mosquito Coast. Neither the Clayton-Bulwer Treaty, nor any other, has aught to do with this aspect of the matter, as the history of Mosquitia and its entanglements will disclose.

By right of discovery the Mosquito Coast belonged to Spain, Columbus having formally taken possession, planting the standard of his Castilian sovereigns at the mouth of the Rio Tinto on August 17, 1502. He then rounded Cape Gracias á Dios, and made two landings, one at the Rio Grande, and the other in the neighborhood of Monkey Point, where he obtained the name of Cariari from the natives, which he gave to the entire region. He made no careful explorations. The low-lying land, singularly destitute of prominent landmarks, skirted by dangerous coral reefs and coral islands, offered few attractions to seekers of golden empires. The claim founded upon discovery was recognized, however, by a papal bull, based upon which a concession was granted to Diego de Nicuessa, whose expedition was wrecked at the mouth of the Wanks or Segovia river, just under the lee of Cape Gracias á Dios. From this period the coast attracted no attention until the rise of the buccaneers in the seventeenth century. Its numerous harbors, and wide lagoons, and the intri-

cate channels through its fringe of coral reefs, gave it fresh importance as a place of refuge, and as a convenient point from which to descend upon the Spanish Main, or to surprise the treasure ships from Cartagena. Cape Gracias, or more properly, the harbor at the mouth of the Wanks river, was the principal rendezvous of the buccaneers, and here also was the principal settlement and the home of the chieftain of the Mosquito Indians. From this piratical occupancy were derived the claims which England subsequently made to a protectorate over the coast. These claims, however, were the result of a gradual growth of English influence and of actual occupancy later on, so that in time her rights rested upon something better than flimsy pretence.

The buccaneers, perceiving the need of a resort where they would be welcome rather than tolerated from fear, used whatever urbanity and kindness of nature they possessed to render themselves beloved of the Indians. Trinkets, clothing, rum, and food were freely bestowed. They were taught the use of fire-arms, and assisted in their incursions upon the Spanish settlements north and south of them. Many of the pirates being Englishmen, the natives were early instructed to reverence the name and power of England, and the English language became familiar to them. When finally in 1655, Jamaica was seized for England under Admiral Blake with the co-operation of the buccaneers, the Mosquito fruit was ripe to fall into the English basket. Control was maintained through this piratical brotherhood until its final dissolution in 1688. The last contact of the Mosquito Indians with their free-booting friends was when they made their famous re-

treat from the Pacific Ocean, and descended the river Wanks, worn and wasted, seeking aid and protection from the very savages whom they had feasted and corrupted in the days of their strength and pride. Fearing to lose the advantage gained in Mosquitia, the chief-tain of the tribe, who bore the name of Old Man, was taken to Jamaica in that year, and after affording infinite amusement to the profligate Duke of Albemarle, then governor of the island, was given what purported to be a commission as King of the Mosquitos, and a gold-laced cap, which he was told was his crown and emblem of authority. The document, which was long preserved among the Mosquitos, actually made the "King" a Governor General under England, and warned him to aid and succor all Englishmen visiting the coast. Subsequent visits were made by Mosquito chiefs to Jamaica, whence they returned with gifts and an ever-increasing notion of their own importance, which is probably the foundation of the legend current to-day among the Mosquito men, that they once held Jamaica in subjection and sent annually to levy tribute from the people of that island. Certain it is that a common Mosquito designation of Jamaicans is, "My Grandfather's Children," an appellation which is frequently thrown in the faces of the Jamaicans who now hold the reins of Mosquito government. This loose connection with England sufficed for all practical purposes until the tension between Great Britain and Spain in the early part of the eighteenth century prompted more definite relations. Vice Admiral Vernon wrote in 1740, "Great advantage might be made of the friendly disposition of this people (the Mos-

quitos) in case of war with Spain ; and it is not to be doubted but in case of a rupture the government will improve so fair an opportunity of advancing the interests of the British Nation and its colonies." In the same year Gov. Trelawney of Jamaica urged upon the Duke of Newcastle the advantages that might be gained from inciting the Mosquito Indians to undertake extensive depredations upon the Spanish settlements. Efforts were also made to secure the formal cession of the coast to England by the Mosquito "King," a business negotiated by Robert Hodgson, who acquired the title of superintendent. British settlements were made, and British authority was maintained by troops sent from Jamaica in 1744. Spain made a protest against this invasion in 1750, and Hodgson, acting under instructions from Trelawney, represented that as England held considerable commerce with the coast, she was merely keeping a force on hand to repress Indian hostilities against the Spaniards, which would interfere with the even course of trade. This clever artifice deceived for a time, but when the trick became apparent, and British oppression provoked an insurrection of the Indians, Gov. Knowles of Jamaica made a plain statement of the case to the government, and advised a relinquishment of all claims to the Mosquito Shore. Accordingly England agreed, among other things, in the Treaty of Paris in 1763, to demolish all fortifications on the Mosquito Shore and other parts of Spanish territory, recognizing as valid the Spanish claim founded upon the papal bull. Fresh incursions followed in spite of the Treaty of Paris, which led to the treaty of 1783, by which England agreed to abandon the Spanish Conti-

nent. England persisted in holding Mosquitia even after this, claiming that it was not part of the "Spanish Continent," but belonged in the "American Continent," a subtlety extinguished in the supplementary treaty she found it expedient to ratify in 1786, whereby she explicitly renounced all claims to dominion or control over the Mosquito Shore. The Indians continued under the nominal rule of native "Kings," acting in accordance with the advice of British traders who frequented the coast, until the uprising of the Spanish colonies in 1821, upon which England at once re-entered Mosquitia, taking a native chief to Belize and crowning him as "King" under the formal protection of Great Britain. The first "King" was soon killed in a drunken brawl, and within the two succeeding years two poor wretches were crowned and dethroned by the English, and a third, Robert Charles Frederick, was, on April 23, 1825, erected to carry out the will of England more perfectly. Failing to fulfil satisfactorily the office of puppet, he was carried off in a British war-ship to Belize, where he died. His son succeeded, obeyed his English masters, and thus a line of hereditary chiefs was established which continues in authority to the present day. From one of the deposed "Kings," George Frederick by name, Sir Gregor Macgregor, after his flight from Cartagena, obtained a worthless grant of land which he sold to English merchants for £16,000 in good sterling coin. The result was an attempt at colonization which met with disastrous failure and a wicked sacrifice of the lives of hundreds of simple colonists. Sir Gregor, undismayed, once more endeavored to evolve something out of Mosquitia in the form of an ideal republic to be

known as Indialand, an asylum for men of all races, and of all creeds, which should be a sort of paradise in the centre of the New World. Conventions were held, and an elaborate constitution and code of laws drawn up, which were unquestionably the best ever yet offered to this unfortunate country. While the dream of an ideal Indialand was fading from the minds of its visionary advocates, England was slowly tightening her grasp upon the coast. The star of annexation had once more risen and fixed the attention of British statesmen. Preparatory to such a move the question of territorial limits was pressed toward a settlement. In the vague uncertainties of the past no effort to define them had even been attempted. The first authentic statement of the territorial claims of the Mosquito Indians is found in a work entitled "The Mosquito Indian and his Golden River," written by one "M. W." in 1699, eleven years after the end of piratical control, and printed in 1746 "for Henry Lintot and John Osborn, at the Golden Ball in Paternoster Row." According to this traveller, who was an Englishman, the Mosquito territory began at Cape Cameron on the coast of what is now Honduras, and extended as far as 165 leagues south from Cape Gracias á Dios. This would end at Pearl Lagoon, thirty miles north of Bluefields, and 100 miles north of Greytown. The western limit was less closely marked, being a shifting skirmish line between the Mosquitos and the Alboawinneys, probably the tribe now known as Soomoos. Later the English laid claim to Bluefields, but it appears to have been an invasion by the British and their Mosquito "allies" of the territory formerly held by the Cookra Indians. From

1836, however, the limits were rapidly extended westward and southward until at length the entire coast was claimed as far south as the Rio San Juan del Norte, including that river as far west as the Machuca Rapids, and its port of Greytown, then known as San Juan de Nicaragua. Thos. Strangeways, K.G.C., had unofficially claimed the coast for Mosquitia from Cape Honduras to the Rio San Juan, as early as 1822. The growth of trade with the west coast of North and South America, and the westward march of empire in the United States, made the importance of Greytown manifest to British statesmen. Actual occupancy of this new territory was not made, however, until 1848. The inevitableness of the acquisition of California by the United States showed to Lord Palmerston that the time had come to seize the natural gateway to our western possessions. The move was accordingly made, in the name of the Mosquito "King," two English war vessels entering Greytown harbor in the month of January, 1848, tearing down the Nicaraguan flag, hoisting that of Mosquitia in its place, and assuming the reins of government. The Nicaraguans succeeded in expelling the intruders, but the English returned with reinforcements and overpowered the Nicaraguans, whereupon all offices were filled with Englishmen, and a Jamaican police force patrolled the town. At the same time the British attempted the seizure of the Island of Tigre, in the Gulf of Fonseca, the supposed western terminus of a Nicaraguan ship-canal, rendering their motives in their Mosquitian usurpations no longer able to be concealed.

The outcome of these performances was the negotiation of the famous Clayton-Bulwer Treaty, signed on

April 19, 1850, whereby the United States and Great Britain mutually agree that neither "will ever obtain or maintain for itself any exclusive control over the said ship-canal," nor occupy, fortify, or colonize, or assume or exercise any dominion over Nicaragua, Costa Rica, the Mosquito Coast, nor any part of Central America, nor to make use of any protection afforded by either of the contracting parties to any Central American state to acquire such powers or privileges. There was nothing in the treaty relative to the Mosquitian invasion, and it in no wise terminated British control in the name of Mosquitia over the region adjacent to the Rio San Juan, although it was held to do so by our Department of State. The acts of this Anglo-Mosquitian government became so perverse of justice and order, more particularly in its infringement of the rights of American citizens, and in its interference with the Atlantic-Pacific Ship-Canal Company, an American organization, as to lead to Capt. Geo. A. Hollins, U. S. N., bombarding the town and driving out the English, on July 13, 1854, after failing to secure the protection of American property by the local authorities. The remaining population organized a government under a provisional constitution, which, under the terms of an armistice between Mosquitia and Nicaragua, held control of the port until the questions in dispute were finally settled by the Treaty of Managua in 1860.

It had been the general impression that the Clayton-Bulwer Treaty was to terminate English influence in the Mosquito Territory, which view was also held in Nicaragua. In answer to protests Sir H. Bulwer denied to Daniel Webster that the treaty was designed to

affect the position of Her Majesty on that coast, and the British minister to Central America, Frederick Chatfield, informed Nicaragua, on Aug. 16, 1850, that insistence upon her claims to the Mosquito shore "will not be much longer of any avail," that reliance upon "the protestations and assurances on the part of pretended friends" (viz.: Americans) is an incautious proceeding, and that "Nicaragua would do well to come to an understanding, without delay, with Great Britain, upon whose relations depend, not only the commerce and welfare of the state, but the probability of any positive measures being adopted for establishing an inter-oceanic communication across her territory, since London is the only place where sufficient capital and spirit of enterprise can be found for carrying out a project of such magnitude."

The same minister in December of the same year (1850) had "the honor to declare" to Nicaragua what were the boundaries of the Mosquito Coast, claiming the territory as far south as the Rio San Juan, and as far westward on that river as the Machuca Rapids. This series of complications coupled with British efforts to organize a government on the islands of Ruatan and Bonacca in the Bay of Honduras, led to a tedious diplomatic controversy, in the course of which Lord Clarendon justified British aggressions on the Mosquito Shore on the ground that the treaty of 1786 had been abrogated by the war between the contracting parties in 1789, regardless of the fact that in 1814 England had revived all treaties with Spain which had been operative prior to that war, and accused Mr. Buchanan furthermore of confounding the conditions of a sover-

eignty and a protectorate—the confusion very evidently arising from the difference between the American conception of a protectorate and the British practice under such conditions. Under pressure from the United States the Crampton-Webster Treaty was negotiated in 1852, wherein England tacitly renounced the contested protectorate, and surrendered to Nicaragua the Mosquito Coast, over which the Republic was to hold only a nominal sovereignty. The grounds of this treaty were not accepted by Nicaragua, so that in 1856 the Clarendon-Dallas Treaty was drawn up, containing provisions in many respects similar to those of the Treaty of Managua. This treaty, however, failed of ratification. Arbitration was then proposed, but rejected by the United States, which government finally discontinued such fruitless negotiations, threatening that the abrogation of the Clayton-Bulwer Treaty might be determined upon later. The risk of losing the signal advantages secured to her under that treaty, and the imminent danger of war with the United States, decided England on treating at once with Nicaragua and Honduras for the relinquishment of the Mosquito Coast, whereby, at the same time, she would appear to be doing an act of simple magnanimity. The Treaty of Managua and the Treaty of Comayagua were the results, which were accepted by the United States as a satisfactory solution of the pending disagreements. The difference between the two treaties is not a little remarkable. The Honduranian portion of the Mosquito Coast was ceded absolutely and unequivocally to Honduras. The Nicaraguan portion was ceded to Nicaragua under terms whereby to this day England

may, upon some seeming, trivial infraction, re-assume the rôle of protector over the Coast. The conditions of the treaty are substantially these: Great Britain recognizes the sovereignty of Nicaragua over "the country hitherto occupied or claimed by the Mosquito Indians within the frontier of that Republic"; a district within the territory of the Republic is to be assigned to the Mosquito Indians, under the sovereignty of the Republic; the Mosquito Indians are to enjoy the right of self-government according to their own customs and laws, so far as these are not inconsistent with Nicaraguan sovereignty; the Republic is not to interfere in any matters of government in Mosquitia; the limits of the assigned district are to be, on the south the Rio Rama, on the west longitude $84^{\circ} 15'$ W. from Greenwich, on the north the Rio Hueso, on the east the shore line of the Caribbean Sea (*vide* Stieler's Atlas); the Mosquito Indians are to have the power by their own vote of annexation to Nicaragua, and of thereby becoming citizens of that Republic; Nicaragua is to pay a subvention of \$5,000 annually for ten years to Mosquitia for "the social improvement of the Mosquito Indians, and of providing for the maintenance of the authorities to be constituted" in accordance with the treaty; Greytown is to be constituted a free port, with certain privileges of local self-government. Certain duties were to be levied on goods entering at Greytown but destined for consumption within the Republic, such duties to be applied to the payment of the subvention to Mosquitia.

Difficulties under this treaty almost immediately arose. The subvention was paid promptly at first, and then withheld on the plea of illegal status of the new

chief, and of the government of Mosquitia being actually in the hands of foreigners, the latter objection being undoubtedly well founded. The true object of Nicaragua was, however, to force Mosquitia into annexation. Mosquitia was furthermore compelled to import all goods through the port of Greytown, upon which 10 per cent. duty was levied on the ground that the goods were intended for consumption "within the territory of the Republic." Nicaragua also undertook to grant privileges for exploiting the natural products of Mosquitia, and to require registration and license of German colonists desiring to settle on Great River in the assigned district. After a long controversy with England, it was agreed to submit the points in dispute to the arbitration of the Emperor of Austria, whose award was made in July, 1881. It is a document of the highest interest, of which only a brief résumé may be attempted. The sovereignty of Nicaragua was declared a limited one, Mosquitia being merely an inseparable, "political appendage of the main country." Nicaragua might not regulate the trade of the Mosquito Indians, nor levy import or export duties within the assigned district, which right belonged to the Mosquito government. Neither might Nicaragua grant concessions within the district. The collection of import or export duties at Greytown was forbidden. Mosquitia was allowed its own flag, with some emblem of Nicaraguan sovereignty attached. The subvention was to be paid in full, which was done at once.

The actual intention of Nicaragua in agreeing to pay this sum was to remunerate Mosquitia for the absolute sovereignty supposed to be acquired over the territory

adjacent to the Rio San Juan on the south and to the Rio Wanks on the north. She chose instead the pretence of magnanimity, attaching no conditions to her obligation to pay, so that she now holds this territory only through the faithful observance of all and every clause in the Treaty of Managua, any rupture of which might revive Mosquitia's former claims. England's right to interfere in behalf of the Mosquito Coast for the fulfilment of the treaty was expressly recognized by the Emperor of Austria, in these words: "England has an interest of its own in the fulfilment of these conditions stipulated in favor of those who were formerly under its protection, and therefore also a right of its own to insist upon the fulfilment of those promises as well as of all other clauses of the treaty."

The prospects for fresh interventions by Great Britain, and the outlook for future stability of government in Mosquitia, will best appear from a critical study of the country, its people, laws, and present relations with its nominal sovereign.

II.—DESCRIPTION OF THE COUNTRY.

In the very title of the Mosquito shore, devoid of meaning though it be, lurks a suggestion of flat and miasmatic wastes which personal inspection speedily confirms. Save for Bragman's Bluff, whose whitish cliffs mark the limit of an eastward off-shoot of the Andean upheaval, and for Bluefields Bluff away to the south, which guards the entrance to one of the loveliest bays in Central America, the coast for leagues and leagues presents the same uninterrupted line of level verdure, like a low horizon cloud, as viewed from the sea,

ashen gray in color, here and there empurpled from the blending in the atmospheric blue of forest tints of red and brown. At intervals a little dip in this level line, scarcely discernible to the unpractised eye, shows where a river breaks through to the sea. Parallel with the shore, at distances varying from three to six miles and more, extends a chain of coral reefs and islands, dividing the beryl-tinted shallow waters of the coast from that wondrous blue of the open Caribbean. The reefs often reveal themselves by foaming snow-white breakers. The islands, seldom more than a few hundred feet in length, are covered to the water's edge with groves of cocoanut palms, forming pictures ideally tropical, ideally beautiful. The reefs are not continuous, but are gradually becoming so, and new islands are forming by accumulations of detritus upon the submerged ledges, so that in time a new coast line will result, enclosing lagoons between it and the present shore. In this manner the existing coast line was developed, behind which lies a series of wide lagoons, having a still more ancient coast line for their western limit, beyond which again are found other lagoons and marshes that were once the open sea. The Mosquito shore is thus seen to owe its existence to a series of seaward growths, the outcome of a gradual continental uprising, assisted by the secretions of the coral insect. Close by the ocean there is little land available for industrial uses. Excepting occasional slightly elevated sandy beaches, suitable for cocoanut plantations, the whole coast is fronted by impenetrable mangrove swamps, a jungle of fantastic gnarled and twisted roots and branches, so serpent-like in form as to inspire involuntary shudders. Further

inland ancient marshes have become converted into wide savannas, affording pasturage for cattle, and these in turn give way to extensive forests of pitch pine, which are succeeded by the typical forests of the tropics which envelop the country westward to the mountains, sweeping up and beyond their summits into the central regions of Nicaragua.

In spite of such extensive areas of swamp and marsh, the climate has been proved by experience to be free from that deadly character, which is the bane of so large a part of the American Isthmus. All the conditions productive of malaria are present, but the ceaseless trade winds from the Atlantic and the Caribbean sweep away the miasmatic exhalations, and purify the air. It is a land blessed with abundant sunshine, but while overhead the sky is clear and blue, the vapors borne westward by the winds condense upon the mountains in towers of cloud which seem to topple over as night draws on, and roll back upon the coast in furious showers. To whatever cause it may be due, the Mosquito Shore is not unhealthy, and no authentic case of yellow fever has ever been reported throughout its length, an immunity due no doubt in part to the rigid quarantine regulations which have been maintained for decades.

As might be expected from the character of the coast, it possesses many harbors, which will assume an increasing importance with the growth of commerce. Each of the five great rivers of Mosquitia either empties into a lagoon before reaching the ocean, or else has a lagoon connected with it by navigable channels. These lagoons form perfect landlocked harbors, but

unfortunately the entrance to each and all is obstructed by shallow sand bars. With the exception of the Bluefields bar, the depth of water does not in any case exceed seven feet at high tide. Fortunately, on the other hand, when trade shall warrant the expense, an ample depth of water can be secured over these bars by systems of jetties, in each instance not longer than from one and a half to two miles, having naturally constricted channels behind them pouring down their floods with a velocity of from three to four miles an hour. The mangrove thickets growing to the very ocean's edge would lend themselves better than willows to fixing the jetty embankments, and by encroaching ever more and more upon the rivers they serve now to confine them within such narrow limits as to keep channels scoured out to a great distance inland, of sufficient depth to float large ocean-going ships. Beyond all question the finest harbor in Mosquitia, if not the best on the whole eastern coast of Central America, is that of Bluefields. Here is a natural depth of water of 16 feet, easy to be increased by dredging, or more permanently by jetties, with an enormous sheltered lagoon, furnishing abundant anchorage ground, with an elevated point, or bluff, on its eastern side, with thirty feet of water close up to the shore, admirable for wharfage facilities. Bluefields Lagoon is more than fifteen miles in length, and seven miles in width, a veritable inland sea. Its shores are high and well-adapted to agricultural pursuits, particularly to the raising of bananas. The culture of this fruit has already assumed great importance here, the banks of the Bluefields or Escondido River being lined for over

sixty miles with extensive plantations. The Bluefields River, the most important in the Mosquito Reserve, is navigable for vessels of eighteen feet draught for sixty miles from its mouth, and is actually ascended to that distance to-day by ships of the Morgan Line and of the Bluefields Banana Company, plying between this point and various ports in the United States. Another advantage of the port of Bluefields is that the high land, beginning at the very edge of deep water, extends uninterrupted by swamps and marshes back to the mountains, through which is a pass leading into the central plateau at San Miguelito on Lake Nicaragua, constituting a feasible route for a railroad. An American company has already begun the building of such a road, which certainly has many promising features.

The city of Bluefields, capital of the Mosquito Coast, is situated upon rising ground on the western side of the lagoon, seven miles distant from the anchorage at "the Bluff." It can not be reached by vessels drawing more than four feet of water, owing to bars which have formed in front of it, which circumstance greatly retards its commercial development. Various inconclusive explanations are offered for this unwise location of the town, but luckily it boasts no architectural extravagances which will impede a change of site, and a movement has recently gone so far as the acquisition of land on "the Bluff," upon which is to be built a new city. Common sense stamps a mark of approval on the project, and the pockets of the merchants which will fatten by this removal, through the saving of all lighterage charges, will determine its execution. The new site has many advantages. The Bluff is a rounded hill,

lengthened toward the north, somewhat less than half a mile in width, and about a hundred feet in height. On one side is the ocean, on the other the picturesque lagoon, with its rim of hills, and far to the southward the blue mountains of the Cordillera de Yolaina; as charming and as healthful a position for a city as could well be found. From a distance Bluefields presents the picture of a white town, peeping from masses of verdure along the sides of a hill which rises like a little mountain behind it. A little steam launch, or a sail boat, conveys you from the ship, past palm-covered islands in the lagoon, toward the town whose picturesque changes upon approach to a very plain assemblage of wooden structures, most of which stand well up from the ground upon posts which serve in lieu of foundations. There is not the slightest suggestion of Spanish influence anywhere discernible. It looks decidedly American; not unlike a Western mining town in many of its aspects. It bears marks of rapid growth, a sort of hasty, inconsequential development, suited to present emergencies, until it shall have time to build more permanently. There is just one street, a long, winding, hilly, rugged roadway, over bare outcropping reddish rocks. Dwellings, stores, and occasional palm-thatched huts are promiscuously intermingled. Now and then are seen attempts at gardens, some of which are luxuriant and beautiful, the richly-foliaged bread-fruit tree being conspicuous at every turn. The mission chapel, a spacious wooden tabernacle of large seating capacity, stands, surrounded by cocoanut palms, in a prominent situation overlooking the lagoon. Below it in a hollow, built over the water,

is the public market, where turtle and beef, cassava and fruits, are dispensed over none too cleanly counters. Just beyond is the government building, unpretentious, wooden, with a sign of state in its flag-staff and its solid cement stoop—very like a little Western court house. A few little lanes, not worthy the name of streets, straggle off from the main, or King Street, into that region locally known as “out back,” where the women wash clothes and spread them to dry on the grass beside Gunboat Creek, which insignificant streamlet loses its identity in the broad sheet of flood waters which sweeps down the hillside during the early morning showers. These uncontrollable floods are a sufficient vindication of the disuse of foundations in buildings here, but there seems to be no adequate explanation for the absence of those broad rambling piazzas, usually so common in southern countries, and which add such comfort to tropical existence. On the whole, however, in spite of much filth obnoxious to a Northerner, Bluefields may rightly claim to be one of the neatest, cleanest cities in tropical America, which compensates for a host of other deficiencies. Its population to-day numbers about 3500 souls, augmenting constantly, and destined to rapid increase upon the founding of the new city on “the Bluff.” It may easily become a more favorite resort for tourists than any of the West India Islands, when some one knowing the needs of this class of people shall build a comfortable hotel on “the Bluff,” and provide a wholesome cuisine. It is only five days steaming from New Orleans, the climate is propitious, and the scenery charming. In fact there is no business enterprise which would accom-

plish so much as this for the commercial advancement of the coast. Such an influx of well-to-do foreigners as would ensue might work advantages for the Mosquito Coast, similar to those which have resulted from a like cause in Florida.

About sixty miles up the Bluefields River is the little town of Rama, the centre of a large banana trade. The possession of this point is disputed by the Mosquito government and Nicaragua. The Nicaraguans now hold authority over it, and the question may involve a new arbitration if England responds to the protests of Mosquitia, although the matter depends in reality upon nothing more than the determination of a meridian. The exact demarcation of limits for the Mosquito Reservation will probably occasion numerous disputes. The adoption of *any* natural boundaries lying near those contemplated by the treaty, and proving upon investigation to be more convenient, was provided for in the Clarendon-Dallas convention, which failed of ratification. The Treaty of Managua allowed no such adjustment to geographical configuration of the territory, and there already seems to be grave doubt that the so-called rivers Rama and Hueso have any such definite character as will serve for the stipulated limits, in which case nothing short of a supplementary treaty will meet the exigency. The assumption of the Mosquito government to grant mining claims, at some distance in the interior towards the northern part of the Reserve, has recently filled the air with additional uncertainties, likely to lead to a critical tension.

North of Bluefields about thirty miles lies Pearl

Lagoon, receiving a large river of the same name. On the western shore of the lagoon is situated the pretty little town of Pearl City, almost as picturesque as its sister city on the south. Here is the home of royalty, the residence of the "King," or Chief, as the people are now more wisely calling him. The commercial importance of the place has decreased since the exhaustion of the mahogany forests on the river behind it. Another forty miles northward brings one to Rio Grande, where is situated a straggling town, consisting principally of palm-thatched huts, with a few frame residences and traders' shops. The mahogany cutting on the upper river brings no little business to the place, and rubber is still brought down in considerable quantities by the Indians. North of Rio Grande some twenty-five or thirty miles is Principulca, the most thriving of the small towns along the coast. Its aspect is not engaging, and it can never be made so. The ground is low, reclaimed from the mangrove swamps surrounding it. The Principulca River flows in front, the single irregular line of huts and flimsy frame structures following along the southern bank of the stream and curving around upon the beach which faces the Caribbean. Rubber has been its chief commercial dependence until recently, when discoveries of gold upon the head waters of the Principulca and its tributaries, have given such an impetus to trade that all the wholesale merchants of Bluefields are establishing branch houses here, and many new buildings are being erected. The actual centre of mining is at Cuicuina in Nicaraguan territory, but, as the only route of communication with the world is by way of the river to the

coast, Principulca becomes the centre of the mining excitement, and reaps the principal profits from it. From this point northwards are numerous little settlements, consisting chiefly of Indians and Sambos, of whom more anon. Two places among these deserve special mention. The first of these is the famous Schultz plantation, known as Wounta, which is an object lesson of value as showing what thrift and energy can accomplish, even on the Mosquito Shore. A grove of coconut palms four miles in length is something of itself to attract attention. A well-tended garden of many varieties of vegetables, flocks of fowls, pastures well-filled with cattle, bespeak provision for the natural wants of man, which commands a respect for the husbandman scarcely comprehensible outside of a country where people make shift to exist on turtles and plantains, and a few other ill-cooked substitutes for food, as is the case throughout nearly the whole of Mosquitia. The fact that Wounta Plantation boasts the finest house on the entire coast is likewise significant. The house, it is true, is the result of wealth, but the wealth, on the other hand, is the result of a thrifty utilization of the opportunities which are open to all. Whoever fares badly in such a virgin country as the Mosquito Shore has naught to blame but his own deliberate choice of ill instead of good. The second important place north of Principulca is that rather indefinite spot known as Wawa. At the mouth of the large river of this name is an unimportant settlement. On the shore of a beautiful lagoon a few miles farther back is the town of Caratá, the centre of some small rubber trade, and eighteen miles beyond this on the Wawa River is

"the saw-mill," the only saw-mill between Panamá and the city of Truxillo in Honduras. Americans have started the enterprise, and, if it signifies anything to be driven to its full capacity with orders piling up ahead, the mill must be a profitable enterprise. The lumber is obtained from the forests of pine, which extend for miles between the swampy river margin and the interior savannas. The logs brought to mill are very large, often four feet in diameter at the butt. The trees are tall and straight, with coarse bark like our yellow pine, the foliage being in clumps at the ends of the branches, with three leaves in a whorl. They are heavy with pitch, surpassing in this respect the average of our Georgia pines, which often makes sawing difficult. Reports of gold discoveries in the vicinity of Wawa have drawn thither a number of American prospectors, but nothing is definitely known as yet regarding the outlook for mines in this region. The saw-mill, however, is attracting a population which will doubtless increase, especially as the wide savannas, so accessible here to deep water, are encouraging a cattle raising industry, which may become important within the next few years.

The trade of the Mosquito Coast has been growing in spite of the practical exhaustion of its rubber reserves, a circumstance due to the corresponding growth of the banana industry, and to the discoveries of gold. The mining excitement will probably work much more immediate harm than benefit, by drawing off men and money from enterprises of certain profit to one which is essentially precarious and treacherous. The expansion of credits in consequence of the hopes entertained

of large returns from the miners, who obtain advances upon this basis from the merchants, will result in failures and a serious depression of trade, should there ensue a shrinkage instead of the anticipated increase in the production from the gold washings—a result not unlikely to happen. As yet no quartz mines have been opened up, excepting “La Constancia,” which is worked in a small way by primitive methods, practically proving nothing. The “placer diggings” have in some instances yielded large quantities of gold, and about five hundred men are now engaged in working them. The output for 1891 was 5000 ounces of gold, running about 850 fine. Up to October, 1892, the amount exported within the year reached 8000 ounces. So far as definitely known these mines are all in Nicaraguan territory, ninety-five per cent. of the total product coming from the head waters of the Principulca River. Gold also comes from all of the other rivers, and the Bluefields River is said to have once produced considerable amounts. The banana industry up to the present time is confined to the Bluefields River, which exported in 1891 no less than 1,155,000 bunches, worth about \$231,000. Large bunches containing eight “hands” bring twenty cents on the spot, and six to seven “hand” bunches bring about thirteen cents. The value of the gold exported in 1891 being about \$85,000, it will be seen that bananas are more important to Mosquitia than the precious metals. Next in order of value to bananas is the rubber, of which 600,000 pounds were shipped in 1891, worth about \$210,000, paying a duty of one-half cent a pound. This is quoted in the market as “Nicaragua scrap,” and

"sheet." It is the product of the *Castilloa elastica*, a large, handsome tree belonging to the *Artocarpaceæ*, or bread-fruit family, entirely distinct from the euphorbiaceous seringas which furnish the rubber of the Amazon. The Castilloas grow in the highlands instead of the low marshy districts, so the rubber shipped from Mosquitia comes in fact largely from Nicaraguan territory. The Indians are the rubber gatherers, and in their endeavors to secure a large output they bleed the trees of sap too frequently, from which cause the rubber forests have been so far destroyed that it is only a question of a few years more when rubber exportations from this coast will cease. The governments of Nicaragua and Mosquitia could well afford to encourage the planting of rubber orchards to supplant the wild supply, by offering a bounty upon every pound produced in this way. The duties upon the increased importations of merchandise as a result of this increased exportation of rubber would more than reimburse the governments for this outlay. To be sure it takes ten years to mature a rubber tree, but—ten years roll quickly by, and the people have plenty of leisure.

Cocoanuts and hides form additional articles of export, and an American firm is fast exhausting the mahogany forests along the rivers of Mosquitia. The possible productions of the country would constitute a tedious catalogue. It possesses all the advantages of other well watered tropical countries, without the disadvantages of climate which so often interfere with their development, yet there are few regions which have been so neglected by modern enterprise as this. The reason for this is not occult, or hard to find. It

lies partly with the people who live here, and partly with their peculiar government, for which latter they are not to blame.

III.—THE PEOPLE.

The Mosquito race has become so confused through an intermixture of blood for centuries, that it has lost its distinctive features, and has no existence to-day save in name alone. Class distinctions have, however, arisen, based upon the assumption of racial difference, resulting in what might be termed a Mosquito clan, cherishing antipathies productive of social discord and political evil. The characteristics of the Indian are still clearly manifest in this clan, sometimes predominating, but usually strongly modified by Caucasian and African features. The African admixture produces a type known as Sambos, which had its origin about the year 1650, when a large body of Negroes, most probably from the Island of Samba at the mouth of the Cassini river in Senegambia, were cast away on the coast of what is now Costa Rica, by the wrecking of a Dutch slave ship. These Sambas wandered northward as far as Cape Gracias á Dios, and succeeded in obtaining an allotment of land near Sandy Bay from the Mosquito Indians, with whom they speedily merged, adopting their language and customs. Long before this period white blood had entered through contact with the buccaneers, and upon the dissolution of this floating "Republic of Freebooters" in 1688, no less than one hundred of these rather undesirable colonists settled among the Indians. Constant accessions of whites and negroes from Jamaica have continued ever since, confusing the

mixture more and more, and largely swelling the numbers of those whose trace of the African classes them as Sambos.

Early records of the Mosquito Indians describe them as short in stature, usually dark in color, with finely cut features, and small straight noses, but these facial characteristics have changed to a decidedly negroid type. Their reputation for intelligence seems not to have been exaggerated, although it must be borne in mind that this quality instead of being repressed by servitude was encouraged by the peculiar relations which subsisted between them and their English allies. The language of these people was first reduced to grammatical principles by Alexander Henderson of Belize, who published a treatise upon it in New York in 1846. More recently Lucien Adam has published in Paris an exhaustive analysis of the language. It is fairly complex in structure, has a rich vocabulary, and is notably free from harsh gutturals. It is so generally spoken to-day that the Rev. G. Sieborger has translated the four Gospels into this dialect, although there is scarcely a man, woman, or child in the whole Reserve who cannot use the English language to some extent. Likewise there are few people who cannot speak the Indian tongue.

The Mosquito nation in the olden time was supposed to number about 10,000 souls. The present population of the Mosquito Reserve, which does not include the Mosquito tribe in Honduras, is probably about 7500, of which number upwards of 4000 are embraced within the Mosquito clan. The remaining 3500 are negroes, —mostly Jamaicans,—and whites, who reside chiefly in

the larger towns. Regard for personal appearance is one of the predominant traits of all classes on the coast. The women seldom appear on the streets other than tidily dressed, and at all public gatherings the neat aspect of the people is very striking. This spirit of neatness unfortunately stops at external show, failing usually to extend within the precincts of the home. Personal independence is insisted upon with an accompaniment of insolence, which is a great detriment to the progress of the people. This spirit is intensified by the ceaseless friction between the negroes and the Mosquitos, the influence of which is to abate the generous impulses of both classes. It is still further encouraged by the ease with which the problem of existence may be solved in a tropical country, which invariably leads to subsistence upon the scantiest and poorest fare, obtainable by a minimum of effort. Thus it happens that necessity for long-continued labor is almost unknown, and service of any sort is usually rendered only as a favor into which one must wheedle the people by infinite cajolery. It is not in appearance merely, but in fact, that the money consideration is the less powerful inducement. Imagination can easily picture the indolence and shiftlessness following naturally from this state of things. How much depravity results from it would be hard to say. There is certainly a strange confusion of moral sentiments, an outward observance of many of the Bible teachings of the missionaries, with a corruption of the inner life which it will take strong efforts on the part of those who have the cause at heart, or a radical change in the population, to extirpate, so deeply is it ingrained in all classes.

Theft is uncommon, and it must be said that the people possess a more than ordinarily keen sense of honor in the discharge of debts, while on the other hand they have no conception of the sanctity of ordinary promises, nor do they regard a contract as binding upon them in any respect. Deceit and falsehood are among their commonest vices. They seldom voluntarily offer assistance to their fellows, but will respond heartily to an appeal for aid. They are usually quiet and well-behaved, except when under the influence of liquor, to the abuse of which they are most pitifully addicted. There is not a merchant on the coast who is not engaged in the sale of intoxicants, which are working the moral ruin and physical degeneracy of the people. It is carried to such excesses that the procuring of liquor is the one object of existence for a large proportion of the population, and it may be said that drink is more directly responsible than any natural propensities for the indisposition of the people to engage in productive labor. As it is, the work they prefer to do is the odd job that will quickly turn the odd penny with which to buy a glass of liquor. If the importation of liquor were absolutely prohibited, as was contemplated in the Clarendon-Dallas Treaty, it is almost certain that the increased productions of the coast would in a few years double the present volume of trade.

While the general standard of morals is certainly low enough, a still greater depth of depravity is reached in the relations of the family, where conjugal fidelity is practically unknown. So revolting to every sense of decency and rectitude are the monstrosities resulting

from this wide-spread laxity that no discussion of them in print may be attempted, and yet much may be said in palliation of this state of things. It is the direct result of the teachings and practice of the old time buccaneers and rascally adventurers and traders who for two hundred years held control of this coast. What may we expect where pirates, regarded as friends and as superior beings, train the simple savages to rent them women while in port at the price of "a hatchet apiece"; where settlers from Jamaica establish harems; where traders imitate and even out-pirate the pirates? How can we expect to quickly undo this moral damage by the influence and teachings of missionaries, when the Indians had been taught to believe that these pirates and traders were also Christians, and had even received baptism in the name of the Trinity at their hands? The difficulty is increased from the singular circumstance that these miscreants of old, amidst all their villainy and impiety, were sincerely *religious*, devoutly offering daily prayers, and even invoking God to aid them in their works of rapine, theft, and murder. What wonder that the savage mind became confused in matters of religion and morals? Much has been said against Spanish influence over the natives in the American colonies, but it will surely be hard to find a more deplorable condition of moral degradation than that which has been brought about through British domination in Mosquitia. Strange to say, no efforts at reformation were ever attempted by the English Church, although at one time it was proclaimed as the established Church of the Mosquito Coast. Its labors went no further than the main-

tenance of a chapel in Bluefields, in which the service was read on Sundays. In 1845, however, the Prussian Government despatched a commission to Mosquitia to examine and report upon the country with a view to colonization. The report was published in 1847, and proved to be a remarkable document, containing exhaustive and accurate accounts of the climate, physical peculiarities, and productions of the Mosquito Coast, and of its people, their language, customs, and beliefs. The scheme of colonization was soon lost sight of in the midst of more important political affairs, but the report awakened a spirit of missionary enterprise in many German hearts. Chief among those whose philanthropic natures were touched in this manner was Prince Schönburg Waldenburg, who earnestly recommended the Mosquito Reservation to the Moravian Church (*Unitas Fratrum*), as a field for missionary work. The Moravians were already established in many parts of the West Indies, having begun among the negroes of St. Thomas as early as 1732, and having founded stations in Jamaica in 1754, which had accomplished so important a work as to commend them to the sincere respect of the colonial government. Accordingly a reconnoitering visit was ordered in 1847, two Jamaican missionaries, the Revs. H. G. Pfeiffer and A. A. Reinke, being sent over. They bore a letter from Lord Palmerston, which secured them a gracious reception from the chief and the other Mosquitian officials. They were invited by the local authorities to establish mission stations, and were given important grants of land on Rama Island, and in the city of Bluefields. The commission strongly recommended the work to

the General Synod, alleging a partial knowledge and practice of Christian principles on the part of the inhabitants, confounded with a belief in Sukias or Witch Doctors, and the almost universal prevalence of "polygamy" (a mild way of putting it) and drunkenness. In the following year the Synod at Hernnhut decided to enter the new field, and the Rev. H. G. Pfeiffer, with two assistants, was appointed to carry the plan into effect. The work has grown steadily, but slowly. The total number of "adherents" is estimated at about 3400, but those who are familiar with what is termed "adherence" among the negroes in our own Southern States can judge what significance may be attached to it. Still, there is the force of a moral power working in the community, which has wrought many advantageous changes in the last forty years, and which will do more good in the years to come, aided by the influence of increasing immigration from the United States. There are now twelve mission stations in the Reserve, with nine ordained foreign workers, two native ordained workers, one foreign and twenty-one native lay-helpers, and ten foreign and fourteen native women assistants. The missionaries have labored under a great disadvantage in being of German origin, and having to acquire both the English and the Mosquito languages for use in their work ; and this detracts, perhaps, more than they are aware from their efficiency. Another detrimental circumstance is the close relation subsisting between the church and the government. The officials and the majority of the population speak of it as the "established" church, and religious observances have assumed in reality a formal character quite

in keeping with what one might expect in a state ecclesiastical institution, although there is actually no relation with the government, unless it may be that which is involved in government inspection of the mission schools. The missionary spirit is more clearly manifest in the stations maintained in the smaller, remoter villages. The missionaries are working with sincerity and earnestness, and enduring hardships and privations through which they can be sustained by nothing less than heroic faith and courage. It may be that they have done the best that could be under the circumstances, but there is observable here that same tendency to attach a large importance to small results, which is so common in missionary fields in all parts of the world.

Reformation of the people in morals is the thing now to be striven for. When a race has for centuries regarded the profession of Christianity as not inconsistent with corrupt practices in the common concerns of life, it is evident that church membership must amount to little, and that pulpit exhortation is unlikely to be of great avail. The most effective method will be to work the leaven of righteousness through the people by the education of the young. The Moravian Church in Mosquitia seems to realize this, and it now maintains ten schools, having an aggregate attendance of about 550 scholars. They are further aided in their efforts by the laws of the Reserve which make attendance at school compulsory, and impose fines upon parents who willingly absent their children. This gives a dignity to the schools unattainable where attendance is secured through persuasion, and as a reflex influence the things

taught acquire a larger measure of respect in the eyes of the old. Ability to read and write is common now among all classes, and the next generation will witness the entire extinction of illiteracy in the Mosquito Coast. The honor for this brilliant result unquestionably belongs to the Moravian missionaries, although it will be claimed by several parties. Nicaragua gave a subvention to Mosquitia, which was to be applied in part to educational matters, but it would be difficult to show that any of those moneys were ever applied in the manner intended. England has boasted her efforts to secure opportunities for the social and intellectual improvement of the Mosquito people. But England has done as much harm as good to Mosquitia, and Nicaragua strove to break up the Moravian movement in 1865 by the imposition of onerous duties upon the goods imported by the missionaries. In this attempt they were aided by the merchants of Mosquitia, who regarded with disfavor the trading tendencies of the church officials. It is not improbable that the good preachers were on the dangerous brink, over which fell so many of the early Catholic missionaries in Spanish America, of abusing the commercial opportunities which arose from trying to improve the natives by the introduction of some of the comforts of civilized existence. The check given to this traffic in Mosquitia was beneficial, and now there is much to hope for as an outcome of the excellent educational facilities which the missionaries are providing, aided by the inspiring influence of a body of noble, God-fearing men and women, setting a conspicuous example of the higher life before the eyes of all. The Mosquito Indians are

quick to learn. They are ready imitators. They aspire to emulate the types which enjoy the favor and respect of the majority. The negro we know to possess a spirit of progress and an ability to receive education, as the results in many of our Southern States have shown. These are the materials out of which Mosquitia's future must be evolved. If not the best in the world, they are far from being the worst, and with the suppression of those vices which now enervate and degrade them, they may easily rank among the superior peoples of Central and South America.

IV.

THE GOVERNMENT AND LAWS.

It may readily be imagined that such a population as now controls the government of Mosquitia would fall into many difficulties in adjusting its legal enactments so as to meet the exigences of its own political existence without straining the narrow limits prescribed by the Treaty of Managua. Astute law-makers indeed must they be who could sail securely between the British Scylla and the Nicaraguan Charybdis which threaten their political safety on either side. Where wise and learned men would be troubled, it challenges no little admiration to observe how a simple and inexperienced people have by childlike caution, at the expense of many dangerous omissions, restrained themselves from overstepping their acknowledged jurisdiction. The entire political situation of the country is anomalous. Nicaragua possesses sovereignty over it, but is powerless to enact a single law affecting it. She has no control over Mosquitia except to restrict its

powers within the treaty limitations. She enjoys absolutely no revenue from this territory which is part of her sovereign soil, except such as may accrue from the sale of postage stamps. Mosquitia enjoys the right of self-government to the last detail, except where there might be involved the exercise of sovereign power. The Emperor of Austria struggled to compose the contradictions of this paradox, and was forced to rudely cut the Gordian knot and award that a non-sovereign portion of an independent state might regulate its foreign commerce and impose duties as it pleased. More than this; perhaps the most singular anomaly of all is found in the circumstance that the inhabitants of Mosquitia are devoid of any legal citizenship. They are defined as "subjects" of Nicaragua, not, however, possessed of citizenship, which can only be acquired when the Mosquito Reserve shall voluntarily submit to absolute incorporation in the Republic. Mosquitia, on the other hand, has no power to grant citizenship, since this would involve the prerogative of exacting an oath of allegiance, which is strictly a sovereign right. Accordingly native birth, or residence for brief periods in the country, gives equal privileges, and disavowal of foreign citizenship is unnecessary for the holding of any office in the government of the Reserve. The only apparent exception is that educational or property qualifications, necessary in the case of most incumbents of office, are not required of those who are denominated "Mosquito Indians," this provision being made in deference to what is now practically a fiction that Mosquitia is "a reservation for the Indians."

The organization of the government is tripartite,

without a distinct separation, however, of the three functions. The executive is usually, but not necessarily, the hereditary Chief, who is elected for life, subject to impeachment. The legislative department consists of a General Council, and an Executive Council, enjoying powers which the title implies. The judicial functions of government are vested in four courts, inclusive of the extraordinary court of impeachment. The supreme court comprises in its jurisdiction the powers of appellate, equity, and surrogate courts. It has original jurisdiction over all cases involving large amounts of money or heavy penalties. Furthermore it is charged with entire control of education. Below the supreme court comes the local magistrate's court, which disposes of all petty civil and criminal cases, and controls the police machinery of the country. The magistrate, by virtue of his police authority, exercises executive functions, and thus he comes to be regarded with considerable awe and respect, and while his opportunities for petty tyranny are ample, he is usually the balance-wheel of the community, serving to hold in check those lawless outbursts which would be frequent but for the existence of an official invested with powers of summary and somewhat autocratic action. As an accessory to the magistrate's court is a sort of tribal tribunal, termed the court of arbitration, which has proved efficacious in a region where settlements are far apart and communication is slow and uncertain. In any civil case the plaintiff and defendant may, instead of carrying the matter into an ordinary court, each appoint an arbiter, and the two thus chosen are to appoint an umpire. This tribunal, being duly sworn before the mag-

istrate, is constituted a court of arbitration, with full powers of a court of justice. Its award is entered in the records of the magistrate's court, and no appeal from its decision is allowed, although an action may be brought against any member of the tribunal in case of fraud, which, if sustained, will set aside the finding of the court. Right of *habeas corpus* is secured by law, as also is trial by jury in criminal cases. Grand juries are abolished, indictments being made at the discretion of the magistrate upon information furnished him, bond being required, however, of the informer. Civil cases are adjudged without the intervention of a jury.

The manner of appointing the Chief, and the General Council, is another tribal feature in the working of the government. A public convention of the "head-men" of the Mosquitos and the mixed population recommends forty-three of its number who shall constitute the General Council. These are duly confirmed by the Chief, who has no power to make alterations. The General Council elects the Chief, and also appoints the members of the Executive Council. In the first public convention under the authority of the Treaty of Managua the old Chief acted as presiding officer until the General Council had been organized, when he was elected according to the constitution. The "head-men" are delegated by local conventions, which are seldom conducted with much formality. It will be seen that suffrage in the true sense of the word is not extended to the masses, although every man may, if he chooses, have a voice in the selection of the "head-men," from whom directly emanates all the power of the government. The system practically

results in suppression of the Indian element. The Indian, although naturally intelligent, naturally as capable as the negro, seems to have less political genius. The machinery of government impresses him as a mysterious something which he cannot comprehend, and which he hates because he feels the pressure of its iron heel when he disobeys its regulations. Instead of seeking to control it himself by constitutional means, he speculates as to methods for out-witting it, or for crushing it. The negroes, on the contrary, respond with enthusiasm to the call for conventions, participate in debate, which is only confusion and more mystery to the Indian, and so, when the sense of the meeting is taken, it is found to be wholly African. The Indian will even vote with the negro, being caught up by the only whirlwind of sentiment which has had force enough to impress the assemblage. As a result the Mosquito men are almost entirely excluded from power, and the government falls easily into the hands of the mixed population, as it is called, consisting chiefly of Jamaicans who still claim to be British subjects. The possession of this power by a single class operates further to make that class arrogant toward the Mosquitos, and the strife at times reaches a high tension.

The Mosquito government, being deprived of sovereignty, has no power to grant titles for land. The only freeholds in the country to-day are those which antedate the Treaty of Managua. Leases for ninety-nine years, with the privilege of extension, are granted instead of titles, and an annual board of land commissioners is given control of this department. The system possesses manifest advantages, as it removes at

one stroke every danger that may arise from faulty titles, and it secures the Indian against impoverishment. A mortgage may be executed against a leasehold, but if foreclosed it cannot alienate the property from the original lessee. The mortgage is satisfied out of the rents or products arising from the property for a certain number of years, after which the lessee resumes the full enjoyment of his leasehold. This rule applies likewise to judgments for debt obtained against the holder of a lease. As the Indian clings tenaciously to his home, and will not sell it, any attempts to dispossess him by encouraging extravagant debts are frustrated by this simple expedient. Another check upon the snares, in which foreign traders so often entangle the simple natives of distant lands, is provided in a law forbidding the transference of freeholds or leases to foreigners until they have resided five years in the country. Foreigners may, however, acquire leases from the government, or may lease freeholds. That the land laws of Mosquitia work smoothly is shown by the universal satisfaction with the system expressed on every side. The power to grant concessions is retained by the government of the Reserve, and while the laws are designed to cover various cases, the principle of the leasing system holds with reference to them also in the majority of instances.

Up to this point the advantages may seem to weigh heavily on the side of Mosquitia. She possesses a form of government which may easily be made liberal and representative. She regulates her foreign commerce, untrammelled by Nicaragua. She is master of her own domain with a single restriction, which has

proven a benefit. But there are other aspects of the situation less rosy of hue. In the first place she is powerless to control her own postal system. This is a sovereign right of Nicaragua, and as Nicaragua derives no other benefit from the postal service in Mosquitia than the revenue from stamps, she is utterly indifferent as to the granting of facilities for the transmission of mails. At Corn Island, once governed by Mosquitia, but now controlled by Nicaragua, the mail steamer must deliver the mails, delay three hours until the inhabitants have had time to answer their correspondence—a matter of importance to an isolated community—and obtain a certificate from the postmaster, on pain of a fine and the forfeit of her subsidy. No such protection of Mosquitia's interests is afforded by Nicaragua. Only one post office, with two branches, is maintained in the Reserve. The postmaster is under no constraint to forward letters to their destination at the smaller towns along the coast. Masters of schooners or steamers receive no compensation if they carry mails, and so the entire Reserve is at the mercy of these men, who take the trouble to go to the Bluefields post office for letters, only as a favor to the merchants whose freight they receive. This uncertainty of communication causes frequent losses to traders, amounting to thousands of dollars annually, and discourages the initiation of new enterprises at any distance from the principal port.

A fresh host of difficulties centres around the currency question. Mosquitia has struggled nobly to solve her problem, but she has found herself tied hand and foot by her old bug-bear, the Treaty of Managua.

Nicaragua insists, as she has a perfect right to do, upon the use of her own currency as the only circulating medium in the Reserve. This currency is the Peruvian "sol," whose value is ever fluctuating, and the paper money of the Republic, which is not readily convertible in a region destitute of banks. The "soles," furthermore, are of no value for remittances to the United States or Europe, so that gold is always at a high premium. At one time the government of the Reserve attempted to make United States and British gold the legal standard of values, but they were forced to recede from this position, and re-establish the "sol." Then they undertook to relieve the capital locked up in fluctuating "soles" by issuing treasury notes, based upon "soles" at $33\frac{1}{3}$ per cent., receivable for all government debts, but were promptly called to account by Nicaragua for trespassing upon her sovereign prerogatives. The scheme had failed practically, owing to want of confidence, and had confused local finance, before Nicaragua interfered. Banks of issue are also prohibited by the Republic, and as no bank could exist on the local patronage alone, there is no possibility of rendering foreign exchange an easier matter until some radical alteration of the present regulations has been effected. It would be easy, and consistent with the treaty, for Nicaragua to charter a bank of issue for Mosquitia, with issues secured upon gold deposited in the Nicaraguan treasury, which would infuse new vitality into commercial life on the coast. Her unwillingness to do this, as well as her neglect of the postal system, are probably nothing more than additional examples of her efforts to coerce Mosquitia into annexation.

It would be possible to glean no little amusement from a study of some of the oddities of Mosquitian law, but such humor would meet its own reproof in the patent seriousness of these unskilled law-makers in their struggle to deal justly with their peculiar problems. Still it is necessary to give examples of their simplicity in order to demonstrate that one statute involving serious consequences is not exceptionally incongruous. Owing to certain difficulties with a former Chief, the Councils enacted a law in 1877 setting forth that "All persons giving false or evil advice to the Chief of the Mosquito Reservation . . . shall be liable to be tried for treason or misdemeanor, etc.," which might make it perilous to even converse on political affairs with His Excellency. There is a law prescribing penalties for those who "abuse the authorities"; and by a law of 1889 all the ports and rivers in the Mosquito Reservation are declared "free ports and rivers," which is flatly contradicted by the law providing for the collection of 5 per cent. on the invoices of all importations into Mosquitia, and by the law compelling all foreign vessels to "enter" at the port of Bluefields. It will now be less a surprise, although sufficiently astounding, to know that according to the constitution (Art. IV.) "the laws of England, as the same are now, or may hereafter be known and acknowledged, shall be, and the same are hereby made, the laws of the Municipal Authority * of the Mosquito Reservation, so far as the same can be made applicable to the present and future position, circumstances, and

* It should be stated that the government of the Reserve naturally chose to consider itself constituted a "municipality" under the Treaty of Managua.

form of authority, and when the same shall not be inconsistent and at variance with the sovereignty of Nicaragua." In accordance with this the supreme court is now using Serjeant Stephen's "Commentaries on the Laws of England," Butterworth's edition, 1890, as its standard. Expatiation upon the bewildering tangle resulting from the recognition of three legal authorities, emanating from three different nations, all which must be harmonized in their application to the common affairs of life, is a needless task. Doubtless the proverbial talents of the legal fraternity of the Quaker City would prove inadequate to ascertain "the law" on any given subject under such conditions. One can understand that resort to the court of arbitration would be preferable under all circumstances to falling into the meshes of the law in the ordinary courts, where the meshes are so complicated. But a court of arbitration is only adapted to the needs of a somewhat primitive community. The present conditions render it practically impossible to forecast the legal status of any enterprise in Mosquitia, and until this obstacle, the only serious one her own folly has imposed upon herself, shall have been removed, there will be great difficulty in inducing capital to enter the country. Dependence upon her own laws, imperfect as they may be, limited by Nicaraguan sovereignty, would be infinitely preferable to the existing indeterminate mixture.

V.

THE OUTLOOK FOR THE FUTURE.

The pulse of a new life is so manifestly quickening every portion of Spanish America, that we should nat-

urally expect to find its influence working changes on the Mosquito Coast. The influx of foreigners, though slow, has been gradually increasing within the past ten years. Many of these new accessions have been merchants and artisans from the United States, who have caused the introduction of some improvements and reforms which have modified the old conditions. The drift of emigrants from Jamaica, which for near two hundred years has been setting like an ocean current toward the Mosquito Shore, continues unabated. From this source little benefit is derived, but the newcomers bring with them a certain respect for the superficial gloss of civilization, and are readily brought into kindly temper toward reforms under the guidance of skilful leaders. They bring with them, moreover, uncompromising British prejudices, and a cordial antipathy toward those of Spanish blood. Thus the old fires of hatred, kindled in the early conflicts between the Spaniards and the Mosquito Indians, have been stirred through multiplying decades, and are each day brightened more and more. To the wealth of the community these people add almost nothing, but as they congregate chiefly in Bluefields, they gradually come more or less under the influence of the modern commercial movement, which represents the nearest approach to a healthy development the coast has yet experienced. Unfortunately the possibilities of this new movement are so narrowed by Mosquitia's political limitations, that a point in her progress beyond which she cannot pass will soon be reached, unless her powers are in some manner extended.

The present sluggish population will never of itself

acquire the inspiration of frugality and thrift. If developed in them it will come largely through the friction of competition with hard working emigrants, but nothing short of a rapidly expanding trade will induce such emigrants to seek their fortunes in the Mosquito Reserve. There is lacking, moreover, the spur of patriotism, incident upon citizenship, to impel the people to strive for national advancement. The future of the country is entirely indeterminate. Politically she is, as the old saying has it, "neither fish, flesh, nor good red herring." The influence of this is to dampen the ardor of many who would otherwise render valuable aid to the country's development. On every side one will hear men whose political services would promote the well-being of the commonwealth excusing their apathy on the ground that they intend to remove to other countries as soon as they have amassed a larger fortune, and many men and much money have thus been practically driven from the Reserve. They would rather adapt themselves to faulty laws for a time than undertake the thankless task, the almost hopeless task, of remedying defects which in large part are inherent in the political conditions established by treaty.

In spite of all her drawbacks Mosquitia possesses some conspicuous advantages which must not be overlooked. Deprivation of sovereign powers gives her complete immunity from disturbing foreign relations. She may neither send nor receive envoys, nor enter into any conventions with foreign governments. At the same time she has an implicit guarantee in the Treaty of Managua against being affected in any manner by political changes or disturbances in Nicaragua.

The simplicity of her government renders its maintenance inexpensive. The highest salary paid is one of 3000 "soles" to the chief, equivalent to about \$2100. The salaried officials are comparatively few, and the perquisites of office are small. Taxes are consequently low, the support of the government accruing from the five per cent. import duty, license fees for business ventures, rentals from leaseholds, and a two "soles" poll tax on all except Mosquito Indians. A third advantage lies in the fact that the whole population is free, and the system of "peonage," so inimical to progress in most Spanish American states, has, after a long struggle, been abolished. In 1883 an act was passed outlawing all debts not collected prior to March, 1884. To prevent a relapse of the old state of semi-slavery in which the traders were wont to keep the Indians, this act was amended to impress debtors, upon motion of creditors, into the service of the government at fifty cents a day, one half of that amount being paid to the creditor until the claim is satisfied. This is the last vestige of "peonage" in Mosquitia, and even this is not rigidly enforced. The labor problem is as trying on the Mosquito Coast as elsewhere. Laws have been enacted to mitigate its evils, but always without effect. After many futile expedients the merchants and agriculturists are still forced to procure laborers by infinite coaxing and persuasion, after the manner usual in dealing with primitive people. Enterprises of any magnitude are necessarily conducted with the aid of imported labor, and the government has adopted a regulation regarding such immigrants, which in principle is wise and highly meritorious. Contract laborers from

abroad require to be registered, to pay a small fee, and to give bond for their good behavior during a specified period. Such a law might with great advantage be extended to apply to all immigrants, which would save Mosquitia from the danger of adding further increments of undesirable Jamaicans to her already too shiftless and sluggish population. Indeed it is not at all improbable that some similar regulation might with important benefits be applied in other countries perplexed with immigration problems.

Nature has, moreover, blessed Mosquitia with the excellent harbor of Bluefields, and with deep water up the Bluefields river to a point where high land begins, reaching down from the mountains in the west. The project for building a railroad from this port across to San Miguelito on Lake Nicaragua has much to commend it, and if the road should be built it would unquestionably capture the carrying trade between the coast and the interior of Nicaragua. Greytown, as is perhaps not generally known, is to-day nothing more than an open roadstead, and the Rio San Juan del Norte is so obstructed by rapids as to render navigation both difficult and expensive. Bluefields has everything in her favor, and by establishing rail communication with San Miguelito she would become the great port of Nicaragua, in which competition with the San Juan route the Republic would be a gainer equally with the Reserve through the opening up to colonization of many hundreds of square miles of valuable virgin territory.

Both the Republic and the Reserve have also much to gain through a rearrangement of their mutual polit-

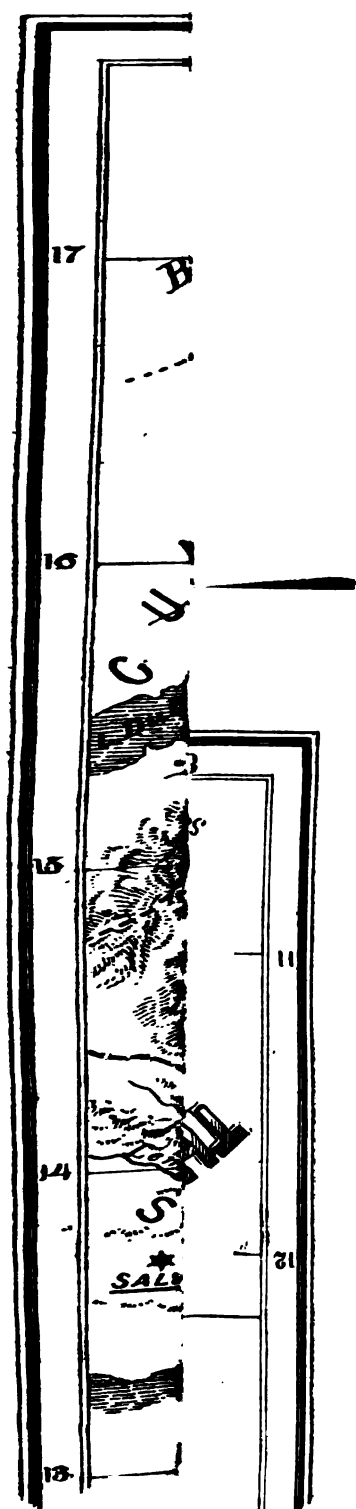
ical relations. Nicaragua has ever cherished the hope of acquiring full sovereignty over Mosquitia. To this end she has employed every artifice of persuasion and coercion to induce the people of the Mosquito Coast to exercise the right of absolute incorporation into the Republic accorded them by Article IV. of the Treaty of Managua. These efforts have not only been stoutly resisted, but they have tended to intensify the hostility which has always existed between the two sections. Although there may be no such thing as a Mosquitian patriotism, there is a bond, distinctly national, binding all classes together in the common anti-Spanish sentiment. If Nicaragua would dispassionately study the situation, she would perceive the utter hopelessness of effecting the annexation she so earnestly desires. That she should seek it is not unnatural, and that she can justify her pretensions on the ground of former Spanish sovereignty over the coast is incontrovertible. But she has lost her opportunity forever. Of that there can remain no doubt. The sooner she realizes it, and sets about improving the relations between herself and her nominal ward, the sooner will both enjoy a larger measure of happiness and prosperity. While much good might be attained by Nicaragua simply extending the powers of Mosquitia, in return for which she might be accorded certain compensatory advantages by the latter, it is evident that better results could be accomplished if Nicaragua should take the initiative in negotiating a new treaty with England to supersede the Treaty of Managua. What Nicaragua could rightly insist upon would be the absolute cession to her in perpetuity of the regions, formerly claimed by Mosquitia,

adjacent to the Rio San Juan del Norte on the south, and to the River Wanks on the north, relieving her from her present decidedly precarious tenure under the Treaty of Managua. In addition she has the strongest reasons for demanding such powers in Mosquitia as will protect her from the embarrassments and dangers attendant upon the authority now assumed by the government of the Reserve, whereby foreign shipping and foreign citizens may be subjected to disabilities and infringements of their rights, responsibility for which acts rests entirely upon Nicaragua as sovereign, while she is powerless to prevent them. An aggravated case of this nature has lately arisen in which United States shipping suffered, which if not already engaging the attention of this Government must do so shortly, perhaps with the result of reviving the Mosquito question between the United States and England. The constitution of Greytown as a free port is amply provided for in the Dickinson-Ayon Treaty of 1867, independently of that of Managua, although England's fears on this point might be set at rest by a separate convention between the three countries most deeply concerned. On behalf of Mosquitia, Nicaragua might, with advantage to all, establish by treaty the status of the Mosquito Indians, which practically means to-day the whole mixed population of the Mosquito Coast, on a basis similar to that of the Indians of the United States prior to 1871, for which she contended in presenting her case for arbitration of the Treaty of Managua in 1881. This would involve the right on the part of Nicaragua and Mosquitia of adjusting their mutual relations from time to time, as changing conditions might demand, by the

negotiation of treaties between themselves. It might also naturally lead to each maintaining an envoy or agent at the government of the other, which would promote a good understanding between them, and facilitate friendly commercial intercourse. The interests of both would also be subserved by the creation of a Mosquitian bank of issue, secured by gold deposits in the Nicaraguan treasury. The postal system of the Mosquito Coast should also be placed under local control so far as relates to the establishment of post-offices and mail routes.

The semi-national position thus secured to Mosquitia, with enlarged powers and closer and more cordial relations with Nicaragua, would lead to important results in her commercial and industrial condition. She would feel a strength within herself, an incentive to higher attainments, which are now impossible. Mosquitia has suffered the hardships of a mock independence for centuries. She has had no other history than that of a dupe in the hands of intriguing powers, who have deftly shorn her of her rights and her dignity in causing her to play a part not her own. At last, on the eve, as she supposed, of a signal aggrandizement in the acquisition of new territory and increased greatness, she found herself cast into a position of political inferiority little better than absolute subjection. The status then assigned her was regarded as merely temporary, but the avenue of relief is one which offers her no assurance of improvement. She fears, and with abundant reason, that the desire for annexation on the side of her nominal sovereign is conceived to a large extent in the ambition of politicians who regard the

people as for the government rather than the government as for the people. The temporary status has proven unsatisfactory. The opportunity is now open for Nicaragua to confirm her expressions of interest in the welfare of the Mosquito Coast by recasting this political anomaly in a better mould, in doing which she would equally consult her own advantage, and honor herself in the prosperity and new vitality she would bring to her long crippled dependency.



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THE WILD PEOPLES OF FARTHER INDIA.*

BY

C. W. ROSSET, *Freiburg in Baden.*

Farther India belongs to the less explored regions of the earth, and certainly very little is yet known of that portion which lies within the French sphere of influence; the district, that is to say, which stretches from the Mekong River to the coast of Anam. In the country directly dominated by them, the French have assuredly done all that was possible to supply exact information concerning the geographical and ethnographical peculiarities of these lands; but their explorations, as a whole, have been confined to the coast region, to French Cochin-China and Cambodia, and to the coast of Anam. The interior has so far been treated with neglect, because of the impracticable nature of the ground and the difficulty of access. Within the limit of his ability, the writer of these lines has made new contributions to the geography and ethnography of these districts, including a detailed map of the population.

The country now under consideration lies between the meridians of $106^{\circ} 20' 15''$ and $108^{\circ} 20' 15''$ East of Greenwich and the parallels of 11° and 13° North Latitude.

Besides the Mekong, which, for the width of its bed

* Translated from the author's MS.

and the length of its course, may well be classed with the giant rivers of the world, one of the larger streams which fertilize these regions is the Donnai. This has its source in the mountains of Anam and flows from the northeast to the southwest in a line parallel with the coast, till it enters the sea somewhat to the eastward of the Mekong, and through a broad delta like that of the greater river. Near the Donnai is the Song Be, which comes from the north. Following this river upstream the explorer reaches under the 12th degree of latitude the country of the Stieng. To the north of these people live the Beunong, and to the east the Ahong, while the Nhung tribe has its home still to the east of the Beunong.

The climate of this country is altogether tropical. The whole Indo-Chinese peninsula is under the influence of the monsoons, and on the regular interchange of these depends, as in India itself, the orderly recurrence of the wet and the dry seasons. The mean temperature for the year varies between 25° and 27° Cent. (77° and 81° Fahr.). The dry season, from December to April, is characterized by a great drought, so that the grasses are scorched by the sun and the plains of the interior are, so to speak, in flames, with great forest and prairie fires over the country, partly the result of accident, but in part the work of the savages, either to provide a way for their passage, or to clear an open space for their rice fields.

The rainy season begins in May and lasts till September; and the rivers, which in the dry season run low and disappear, now rise above their banks and overflow the country for miles in width. At this time

the vegetation assumes a most luxuriant appearance ; where lately stretched a bare and desolate surface, covered with ashes, everything is green and full of life, and the giant grass, which is characteristic of the country, attains in a few weeks a height of several metres.

While in the plains the difference of temperature between the day and the night is only of a few degrees, there is now in the mountain valleys during the day a heat of 35° Cent. (95° Fahr.), which falls to between 5° and 10° (41°–50° Fahr.) at night.

Provided with this overflowing supply of water, the land produces the distinctive tropical growths in greater abundance than the Indian peninsula. The rice culture is extraordinarily developed, and the people plant also sugar-cane, pepper, cardamoms, cotton, and superior tobacco ; and the tropical fruits, pine apples, oranges, and the like, come to perfection.

The mountains are clothed with the most luxuriant, impenetrable forests of precious woods. The teak furnishes ship timber ; and among others are the banana, the sandal-wood, ebony, Indian fig, bamboos of different species, many kinds of palms, dye-woods, olives, gum-trees, the Areca palm and the mulberry.

The animal world is also extraordinarily rich, and presents the same character as in India. Especially to be mentioned are the huge and extremely dangerous elephants which, unlike those of Ceylon, quietly lie in wait for the hunter and charge directly upon him ; the black bear ; the magnificent royal tiger, of larger size than that of Bengal, but not so fearless of men ; herds of buffaloes ; the golden-yellow, short-haired wild cow ; the Dugong cow, on the upper Mekong, with its breasts

resembling those of women ; many kinds of wild cattle, deer and swine ; peacocks, pheasants, and other fowls ; apes, crocodiles in greater variety than I have seen them in the White and the Blue Nile or in the Ganges, and swarming with these on the waters, storks, cranes, and ibises ; great butterflies ; insects, and among these, ants, happily numerous and destructive to other insect life ; pestilent mosquitoes, and a grievous scourge, fortunately known only in the rainy season, the leeches, which find their way unnoticed into the flesh, for even high footgear cannot keep them out. They crawl steadily up over the clothes and suddenly make their appearance on the upper parts of the body. The simplest way to protect oneself is to go with the feet and lower legs bare, and to scrape the leeches away, when they have taken hold, with a bamboo knife, from time to time.

In undertaking to describe any one of the peoples already named, the writer finds himself in the unpleasant position of being obliged to repeat, in each case, a great deal that he has previously said. For notwithstanding the manifold differences in manners and customs, in their living and their pursuits, in character and language, between individual tribes, there prevails among them all, taken as a whole, a very great similarity.

Northwestwardly from the coast of Anam is the home of the Moïs. The name indicates not a single people, but a union of several related tribes which differ among themselves in speech and customs and mode of life. The French distinguish the *Moïs dépendants* and the *Moïs indépendants*. The latter dwell in the far

interior of the country in the most out of the way places.

The territory inhabited by the Moïs is situated on the left bank of the Donnai, in the Anamite mountain chain. The dependent (*dépendants*) Moïs established themselves on the open plateaus, surrounded by high forests, while the independent, or Moïs *indépendants*, set up their dwellings in the densest bamboo thickets of the interior. The form of their huts is characteristic, and a single one lodges a whole village. The building is 80 metres (262 feet) in length, and rests on a foundation of bamboo piles. The walls, which consist for the most part of canes, are not upright, but slope from below upward. The roof has the general form of a gable roof, so that the section of the whole dwelling gives the form of a pentagon resting on a square. Under the roof is the granary, and below the dwelling, between the bamboo piles, is the stable, in which are kept the pigs and the fowls, and, in the rainy season, the cattle. Huge Chinese jars adorn the interior.

The clothing of the Moïs is composed of a cloth band around the hips, about 20 to 30 centimetres (8 to 12 inches) in width for the men, and for the women reaching to the knee. Their color is, on the body, a clear brown; in the face, olive. The hair, which is black and sometimes crisp, is always worn long and twisted in a knot behind. The beard is removed with a kind of pincers, carried about the neck. The eye is not Chinese, but horizontal. The head and brow are high, and the cheek bones prominent; the upper part of the nose is depressed, and the *alæ* are short. The Moï wears in his ear a short piece of bamboo filled with



MOI'S FAMILY AND HOUSE.

tobacco, so that he is always provided with the material for a cigarette, for he is passionately fond of smoking.

He lives principally upon rice, which he himself cultivates, and, when times are hard, upon wild sweet potatoes which grow plentifully in the woods, though at a depth of three feet, so that it is a labor to dig them up.

He eats flesh also, either that of his own pigs and cattle, or that of the game which he kills with a cross-bow. Neither does he refuse to eat monkeys and the gigantic lizard (*Hydrosaurus Salvator*). His industrial activity does not amount to much, for, like all the Indo-Chinese peoples, he is shamefully lazy.

The clothes in use are made by the wild Moïs and are very durable, but the preparation of a woman's garment often requires months. In many instances the clothes are decorated with brass, for both men and women are fond of finery, even of the strangest sort. The brass wire and other articles of barter, such as tobacco, betel, pearls, etc., and salt, the most prized of all, are obtained by the Moïs from the Anamites. Only the dependent Moïs on the frontier are acquainted with gold.

Several families of the same village live together in one hut; each one has its own division, where it cooks for itself, and as there is no chimney, the hut is filled with smoke. The Moï belongs, moreover, to the most uncleanly tribes of Indo-China; and the treatment of the dead is a striking proof of this.

The corpses, which in that climate decay rapidly, remain for days in the living room while the women wail and make lamentation about them; and when at last the body is borne to its last resting-place in the forest, there is never any cleaning of the hut, but on the very mat where the sick man died another lies down to sleep without hesitation.

Under these circumstances diseases like the cholera and small-pox and skin diseases have free play among the Moïs, and their recklessness invites their extinction. *Shum-shum* (rice-spirit) drinking bouts are very frequent, either at the burial services or when sacrifices are offered to the souls of the beasts, elephants, tigers, etc., which they have killed; for the Moï belief is that the souls of the animals continue to inhabit the woods and that, if not propitiated, they will do great damage to their slayer. For every beast the Moï possesses a particular symbol, either something taken directly from the animal, such as a tooth or a horn, or something fashioned out of bamboo, to which he is able to give the different forms he desires.

The Stiengs are held by some to be the original inhabitants of this land. They formerly occupied the coast region and were driven back into the interior. The Stieng is ready to die rather than abandon his mountains and woods, and his love of freedom is so great that even at the cost of his life he seeks to escape from any kind of confinement. In early times these people lived upon the chase and the forest fruits; now, where they begin to feel the French influence, they devote themselves, in a greater degree than the other tribes, to the cultivation of rice, so that they are in a position to furnish this grain to their less agricultural neighbors.

They fabricate various articles of iron, for which they procure the raw material from the Kouïs, once also a wild tribe, but now mingled with the Cambodians. Their territory lies about sixty miles northwest of Sam-bor and contains very rich iron mines. As in the other tribes, the women weave cloth; and the Stieng basket-

work, especially in panniers, is very fine. Among



STIENG.

all the tribes of the interior they are the least advanced in culture, but they are courageous fighters

and are constantly engaged in hostilities with their neighbors, the mountain Beunongs, the Ahongs and Nhongs. Twice a year they burn the grass, which grows luxuriantly around their settlements, in order to secure themselves against a surprise on the part of some



STIENG.

strange tribe, which might creep upon them unawares under cover of the tall grass. It is a sign of the Stieng's warlike inclination that he carries a sabre, which he himself fashions out of iron. His fights are principally for the purpose of man-stealing, and the captives are sold as slaves to the Cambodians, the people of Laos and

others, or to their neighbors who are on friendly terms with them, but the highest price is paid by the first ; and the Stiengs take brass wire, salt, tobacco, etc , in exchange for the slaves. The price for young girls of from 10 to 18 years varies between 10 and 50 dollars, of 75 cents each.

Although continually on the move, the Stiengs are not properly a nomadic people, for they travel round within their own territory.

Like the Moïs, the Stiengs are generally content with one wife, only the rich and the chiefs possessing two, or more. Their huts also resemble those of the Moïs, and it is often the case that several are grouped together.

The domestic animals are sheep, goats and buffaloes, the flesh of which is eaten, and generally half-cooked, for the Stieng cannot wait till the meat is done. It is cooked with fresh aromatic leaves in a bamboo tube, which serves only for the one occasion.

The substantial difference between the Ahongs and Nhongs is only in their language. They are the handsomest race of the country, with a great conceit of their own good looks, and adorn themselves more than their neighbors. They wear variegated head-bands with pearls, several necklaces hanging down on the body, and strings of pearls even on their hips, so that they make a pleasant impression upon the Europeans. Especially remarkable is the manner in which the white, yellow, red and black pearls are distributed in regular order ; and a marked preference is shown for the arrangement of black, white and red, in succession. On the dark brown skin these pearl ornaments produce a charming effect. On account of their physical advan-

tages the Ahongs and Nhongs are exposed to the greatest dangers from the slave-hunters, as merchandise of the highest price. They are good-natured and



AHONG.

obliging, and, in spite of their simple diet, full of endurance, and they win the sympathy of the European in a high degree.

The Beunongs, like the Moïs, are divided into the

dependent and the independent. The former, who are in Cambodia, which is French or at least subject to the French influence, number only about one thousand, and are kept in leading-strings by the Cambodians to



AHONG PEOPLE AND HOUSE.

such a degree that their original brethren, the independents, are content to know nothing about them, and even make raids to capture them for slaves. In the style of their houses and in their dress the Beunongs have copied much from the Cambodian, who despises

them and takes advantage of them to a lamentable extent. They furnish him with horns, skins, deer antlers, and ivory, in exchange for salt, tobacco, betel nuts and betel leaves, cloths, brass wire, and pearls; but the Beunongs are cheated in the most shameless



OLD WOMAN BEUNONG.

manner in the trade. There is compensation for him in slave hunting among the neighboring tribes, since the Cambodian pays high prices for slaves. The Beunong prefers this easy way of coming by property to the tedious labor of agriculture and the frequently poor returns of the chase. It is no wonder, then, that the man-hunter flourishes to perfection in these regions.

The independent Beunongs have nothing to do with

the Cambodians. Their huts consist for the most part of a gable roof, sloping down to the very ground; and under the higher portion of the roof is the corn loft. A single house rarely contains more than one or two families; and three or four houses form a village, which is surrounded by a bamboo barricade, built so close that not even a cat can get through it. Thorn bushes and bamboo stakes, planted in the ground and sometimes poisoned, further secure the entrance to the village. The Beunong is always in dread of a hostile surprise, and for this reason the men who are able to bear arms usually sleep outside of the fortification, with their provision sacks on their backs and their cross-bows beside them. These cross-bows will drive an arrow even through the elephant's hide. The Beunongs live on the products of the chase, sweet potatoes and roots. They cultivate Indian corn and tobacco, and procure their rice from the Stiengs. Their clothing, which is more ample than that of the Moïs, is of their own make and extremely durable, and is adorned with brass wire worked in on the loom. With the Europeans the Beunong is friendly and obliging, not at all dangerous, but yet extremely suspicious; and his visitors can give him no greater pleasure than by taking themselves off with the least possible delay.

GEOGRAPHIC NAMES OF ANGOLA, WEST AFRICA.

BY

HELI CHATELAIN,

Late U. S. Commercial Agent at Loanda, West Africa.

The map which accompanies this article is the one announced in my report on Angola, published in No. 147 of U. S. Consular Reports, and it completes the general map of Angola, illustrating said Consular Report.

As now enlarged by treaties with Germany, Great Britain and the Kongo-State, the Portuguese Province of Angola stretches from the Kongo to the Kunene River and from the Atlantic to the Kassai River. But the Angola nation, of Bantu stock, occupies only the region between Loanda and the Kuangu River from west to east, and between the Lifune and Longa Rivers, from north to south, expanding north and south toward the interior. Its area is very nearly covered by the present map.

The cartography of Angola, like that of all Central Africa, is yet in its infancy. There is no satisfactory map of the Province, nor of any portion thereof. The map of Angola, just published by the Comissão de Cartographia of Lisbon, though beautifully got up, bristles with misprints of names, and fails to give any additional information to that in previous maps.

The only points determined by scientific observations are found along the coast, and on the routes of the

Portuguese and German explorers who have gone from Loanda to Kassanji and up through the (Ngola) country. All the locations in the left Kuanza basin and on the Longa River are simply guess-work. Nor are the locations between the Loji and Mbengu Rivers as reliable as they should be, considering their vicinity to Loanda.

In regard to this map, and all other maps of Central Africa, it may be well to state a few cartographic points, very little known.

(1) The names of countries, tribes, rivers, mountains and localities are almost invariably mis-spelled and mis-pronounced; because the travellers who jotted them down, and the cartographers who reproduced their maps, were no linguists, and because there is no standard system of transliteration commanding universal adherence.

(2) The names given by travellers are generally those furnished by their native guides and carriers, frequently nick-names, and always adapted to the phonologic characteristics of their dialect. The correct name, used by the people of the place or the ruling language, can only be obtained by a resident having a fair knowledge of the local language.

(3) The rivers and mountains are the only reliable, unchangeable landmarks. But their names, in Bantu Africa, are so little varied, that within a radius of fifty miles two mountains, or two rivers running in opposite directions, may bear the same name; and within a radius of a few hundred miles half a dozen rivers or mountains of the same name may be found. Travellers also frequently mistake the generic for the proper name.

(4) The names of native towns and villages are, with very few exceptions, those of the respective chiefs. These do not change with each successive chief, but, like that of Pharaoh, belong to, and are inherited with the office. But the residence of the chief (and site of his village) is either systematically changed after each chief's death, or is subject to fitful transfers owing to the injunction of the diviner, or medicine-man. An African village is still essentially a camp of grass tabernacles.

(5) It is remarkable that, although villages are constantly shifting, and tribes are displaced by wars and commercial pursuits, there has been next to no important change in the habitat of Central African nations within the four hundred years since the discoveries of the Portuguese brought them within the sphere of authentic history. The movements are within a circle.

(6) As every Bantu noun belongs to one of about ten classes, with a different prefix for the singular and for the plural, and as every Bantu tribe or nation has a different set of prefixes, it is evident that only the linguist who has made a comparative study of the Bantu-languages can find his way in the maze of conflicting names, and that a few decades of hard linguistic research must elapse before a satisfactory accuracy can be attained for the whole Bantu-field. Linguistic geographers and geographic linguists must take up one field after another as a specialty, and the geographical societies ought to encourage them in this needed and arduous undertaking.

Excepting a few names of places in the regions

visited by me, or about which I had gathered original information, the present map contains no new geographic names. It is for the most part an eclectic combination of previous special maps, partly rectified.

Its novel feature is that all the names are carefully written as pronounced by the natives of Angola and spelled in accordance with the phonetic orthography adopted in their rising literature.

The pronunciation of Ki-mbundu, the language of Angola, is as follows :

All the vowels as in Italian, *e* and *o* with the open sound. Followed in the same syllable by a vowel, *u* and *i* sound like *w* and *y*. The consonants as in English, except *g* (always hard), *j* as in French, *s* (always sharp), *x* (—sh in English).

The following lists show the difference between the native names and the customary Portuguese spelling and pronunciation :

NAMES OF COUNTRIES AND TRIBES.

KI-MBUNDU	PORTUGUESE	KI-MBUNDU	PORTUGUESE
Musulu	Mosulo	Ma-kioko }	Quiocos
Mutemu	Motemo	Kibokue }	Quiboco
Mbamba-Mouila	Bamba Ambuila	Ma-Xinji	Xinges or Chinges
Ma-hungu	Mahungos	Ndulu	Andulo
Ji-ndembu	Dembos	Mbulama	Bolama
A-bidi	Mubiris	Haku	Haco
Kakulu-Kabasa	Caculo Cabaça	Kibala	Quibala
Ngulungu	Golungo Alto	Kiengi	Quiengue
Kanzengu	Cazengo	Nguenji	Guenze
Ngola	Angola	Mbaka	Ambaca
Mbondo	Bondos	Lubolo	Libollo
Mbamba	Bambeiros	Kisama	Quissama
I-mbangala	Bangalas	Ba-sumbe	Sumbes
		Mbuiyi	Amboim

NAMES OF RIVERS.

Loji	Loje	Lukala	Lucalla
Ngezu	Nguezo	Kuiji	Cuiji
Ndanji	Dande	Kuangu	Quango
Mbengu }	{ Bengo	Luiyi	Lui
Nzenza }	{ Zenza	Kambu	Cambo
Kuanza	Quanza or Coanza	Ngangu	Gango

NAMES OF PRINCIPAL LOCALITIES.

Luanda	Loanda	Pungu a Ndongo	Pungo Andongo
Mbidiji	Ambriz	Kahuhi	Cahughi
Ndondo	Dondo	Malanji	Malange
Bulutu	Bom-Jesus, Bruto	Tala-mu-Ngongo	Talla Mugongo
Kalungembu	Calunguembo	Kasanji	Cassange
Ji-pambu	Pambos	Kapenda ka Mulemba	
Kasoki	Cassoque		Capenda Camulemba
Ndanji a Menia	Danje a Menha	Xa-Kalumbu	Chacalumbo
Niange a Pepe	Nhangue Apepe	Nduki*	Duque de Bragança
Kiongua	Quiongua		

ETYMOLOGY OF NAMES.

LUANDA. This has long been discussed by the newspapers of Loanda; but the only probable solution is that it signifies "lowland" and that it was given at first only to the site occupied by the present Lower City, which resembles the pit of an amphitheatre. To this day, every quarter of Loanda has its own native name; and in native parlance, "Let us go to Loandà" is synonymous with "Let us go down town." The Bay of Loanda is called *Kalunga Kofele*, that is "the Little Ocean," and the great ocean is *Kalunga Konene*.

MUTOLO. This is used for any wild forest region where fugitives find a shelter. The Mutolo, back of Loanda, has been the refuge of the last elephants. While they have been killed and scared off for a thousand miles to the east and a hundred miles to the north and south, a few specimens of this pachyderm have managed to prolong the struggle of life to this day at the very door of the Queen City of West Africa. In the slaving times the Mutolo was inhabited by runaway slaves with whom the Portuguese authorities had little wars. Even to-day the modern slaves of Loanda and the Quanza plantations (the contract servants and la-

*This is simply an adaptation of the Portuguese *Lugue*.

borers) often try to hide themselves in those solitary woods.

MUXIMA. This is the name of the Kisama Chief who allowed the Portuguese to build a fort and a church on the left bank of the Kuanza River. In native parlance the place is still called *Bu Sexi*. The literal translation of *Muxima* is "liver;" but figuratively it is used just as we use "heart."

MASANGANU. Derived from *Ku-sanga*, to come across, to find, and from *Ku-sangana*, to find one another, to meet, it designates the meeting-place, confluence, of rivers; in this case of the Lukala and Kuanza.

NDONDO. This is the name of a shrub.

NDANJI signifies, according to a different intonation of the vowels, (1) a root, (2) a flat rock cropping up from the ground. In Ndanji a Menia (water-rock) the etymology fits in well. In the case of the river Ndanji has also the intonation of the equivalent for rock or slab, not of that for root.

JI-PAMBU is the plural of *pambu*, road, used for crossings or bifurcations.

NIANGE is the name of a white bird which follows the cattle.

PUNGU A NDONGO has, like Loanda, given rise to many discussions. It offers no difficulty for the trained linguist. *Pungu* is used (1) for a big fish, the size of a man; (2) in combination with *Nzambi* (God) as *Nzambi a Pungu* (the great God); (3) for the biggest of the stupendous rocks of Pungu a Ndongo. It evidently meant originally "superlative greatness." *Ndongo* is the name of the Kingdom of Angola. To this day the *Ngola* tribe is also called *Ndongo*, and one of the prov-

inces of the independent *Ngola* Kingdom bears the name of *Ndongo*. *Ndanji* and *Matamba* are the other provinces. *Ndongo*, *Ndanji* and *Matamba* were united, it seems, under the rule of *Ngola Kiluanji kia Samba*, the supreme chief. After the taking of *Loanda* by the Portuguese, *Ngola*, the King of *Ndongo*, moved his residence to the natural fortress of *Pungu a Ndongo*. Hence the meaning "The big rock of *Ndongo*." Driven again from his residence, the King of *Ndongo* moved to his present *mbanza* (capital) on the river *Hamba*.

NGOLA. This must originally have been the title of a chief of the *A-mbundu* (*Ki-mbundu* speaking) nation. The *Kisama* people, who have scarcely been modified by 400 years of contact with the whites, still say *ngol'etu* (our *ngola*) in addressing a chief. Its meaning is "lord" and it may be simply another pronunciation of *ngana*, the present equivalent for "free man, lord, mister, sir." The vowels *o-a* are often pronounced *a-a*, and *l* and *n* between vowels are frequently interchangeable. As the King is the representative of the nation, and all his subjects are his children, they are called by his name *akua-Ngola* (people of the *Ngola*) just as they say *akua-Kasanji* (people of *Kasanji*) when speaking of the *I-mbangala*, or as we might call the Egyptians *Pharaonites* from *Pharaoh*, their King.

NDALA. This word, of such frequent occurrence in proper names, was probably a variety of *ngana* and *ngola*; for *nda* and *nga* are interchangeable, and so are *na* and *la*.

JI-NDEMBU is the plural of *ndembu*, which is the title of a chief or king who has other chiefs under him as vassals. This title is used between the *Mbengu* and

Loji rivers. The principal *ndembu* chiefs are Mbamba-Mbuila, Nambua-Ngongo, Kingengu, Kazuangongo, Ngombe-a-Mukiama, Kibaxi. They form two confederations, and all hold more or less together to resist the encroachments of the whites.

MBANZA. All over the Ki-mbundu language field *mbanza* signifies the residence, or court, of a chief. Among the I-mbangala, and some of their neighbors, *mbanza* is, concurrently with *Kalunga*, the title of any chieftain. In the U-mbundu language field the court is *o-mbala* and the chieftain *se-kulu* (old father). The latter term is also current among the I-mbangala, and is often used in Kimbundu for "uncle." In the Ngola Kingdom a duke is called *mvunda* (in Portuguese spelling *vunda*); a count is *Di-kanda* (in Portuguese spelling Canda); a baron *Mbanza* or *Kalunga* (in Portuguese spelling Banza or Calunga). These titles should not encumber the maps.

SAMBA. This popular Bantu name deserves a special investigation of its history, as it is no doubt the etymon of our Sambo. Its meaning is not clear. In Kimbundu *Ku-samba* is "to greet a chief by clapping hands," and in Christian parlance "to worship, to pray."

NGONGO. This name recurs constantly in proper names, either alone or in combination. It has three distinct meanings: (1) the country round about one; (2) the misery of life; (3) a twin, named after his spirit. In *Tala-mu-ngongo* (look at the country) the meaning is clearly that of (1), for that is the natural cry of one standing on the edge of that precipitous depression, as his eye sweeps over the Kuangu valley.

In most other cases *ngongo* is probably the spirit *Ngongo*, which governs the birth and life of twins, and after which they are named.

MBONDO, a frequent name, is the *Adansonia digitata*, the monkey breadfruit tree.

MUTAMBA is a tamarind tree.

MULEMBA is a wild fig tree.

KISOLE is another kind of a sycamore.

MBANGU is the name of some high mountain in all districts of the Ki-mbundu language field. At Malanji the chief of the Mbamba tribe is called *Bangu* (not Mbangu), and most travellers have thought, erroneously, that the mountain got its name from the man.

NZAMBA is "elephant."

NZAMBI is "God."

NZUMBI is the angry spirit of a deceased person, haunting the living in order to hurt them.

KILUNDU or *Kalundu* is the generic name of inferior spirits, usually termed gods.

MABUBA (*mupa* in the South) is the name of rapids or waterfalls.

KALUNGA, before another name, is, in the left Kuangu basin, the title of a chieftain; therefore "Lord." Near the coast the word signifies only the ocean or the under world, the spirit world, death, eternity.

In the southern Kuanza basin and further south, many names of rivers have the prefix *Ku*: e. g., Kuanza, Ku-tatu, Ku-nene, Ku-bangu, Ku-ito, Ku-angu, Ku-iji. North of the Kuanza River many rivers have the prefix *Lu*: e. g., Lu-kala, Lu-xilu, Lu-tete, Lu-iyi, Lu handa, Lu-eji, Lu-andu.

LETTER FROM MR. CARL LUMHOLTZ, IN NORTHERN MEXICO.

The following letter was received June 13 :

MORELOS, May 21, 1893.

I hope you received a letter sent in January from Guadalupe y Calvo.*

Since then I have been nearly the whole time among the Tepehuanes, a very intelligent but extremely reserved tribe of Indians. I have made a regular harvest of ethnological material from them, and have succeeded in gaining entrance to their secret rites, an allowance which they absolutely refuse (to) Mexicans. They used to be very warlike, probably more so than any other tribe of Mexico. The missionaries found it a hard task to convert them.

At present the greater part of them, who are living in Durango, are getting to be Mexicanized, but of the probably 1500 individuals who live inside of Chihuahua, I was pleasantly surprised to find many in a very primitive state of culture, living in remote *arroyos* (stream-beds) without knowledge of Spanish. They still have an interesting ceremony of making their god and the personified four elements appear at nightly *séances*, for the purpose of which they erect special log houses, that can be made entirely dark inside, having no windows, and but one small entrance.

In "la Semana Santa" (Holy Week) I was fortunate enough to see the big annual foot-race of the Tepehuanes at Baborigame.

* Printed in BULLETIN for March, 1893, pp. 64-65.

Two hundred and twenty-four took part in it, and the race was especially instructive, because the racers were divided into different groups; men, women, married, unmarried, adults, children. However, the sport is not now quite up to the mark of former days, for several reasons, coherent with their "Mexicanized" evolution. The best group of runners was that of the married men, the best of whom, in 3 hours, $1\frac{1}{2}$ minutes, made 13 *vueltas* (circuits). I measured a "vuelta" and found it to be 9223 feet ($9223 \times 13 = 119,899$ feet—22 miles, 3739 feet).

There was no sign of fatigue shown by the two men who came in first; and as an interesting comparison, I may add that some young Mexicans, who also got up a race at the same time, made, the best of them, one "vuelta" in twelve minutes, while all arrived breathless and apparently not having been able to continue much more. But the Tarahumares are far better runners than the Tepehuanes, and have brought the fast racing into a wonderful state of perfection. I merely mention the above facts to show what endurance an Indian can evince, even in the half-starved condition in which the greater part find themselves at present. I was credibly informed by two independent parties, that only 8 years ago in Baborigame, the best man of the "married group" made no less than 27 "vueltas," on this same race course (249,021 feet—47 miles, 861 feet). This runner is recently dead, and was well-known over the Sierra. His antagonist made 26 (vueltas), but fell down exhausted, while the former danced lively next day. The race lasted from midday to about 8 P.M.

I have now gone over the western part of the Sierra

from west of Nabogame to here. It is two or three thousand feet lower than the high Sierra, and surrounded with innumerable *barrancas* (ravines) and *arroyos* which make the landscape, seen from a high point, look like stiffened waves. Although as hot down in the *barrancas* and *arroyos* as in *tierra caliente* (hot land), the real *tierra caliente*, or *la costa* (coast) is not reached in less than four days' travel. Where the *arroyos* lie as high as 5000 feet above the sea-level, as in the one where the little mining-place San José is situated, the climate is remarkably even and probably of the healthiest in the world. Lower down the heat is greater than is consistent with comfort. Here in Morelos we have at present, every day, 100° Fahr. in the shade; but the nights are deliciously cool. Even here, at about 1500 feet above sea-level, snow-falls are not unknown, although rare. On the 11th of January, 1884, the manager of the mine tells me, 8 inches of snow fell in Morelos.

At present, as is well known, we are here in Northern Mexico going through an exceedingly dry time. In two years the crops have dried away in many parts of the Sierra. This year, still no rain. A traveller in such a country suffers considerably, and his animals much more. The water dries up in places where it has never been known to be missing. My mules have had to travel twenty-four hours, in a scorching sun, without water. Still, in these hot *barrancas*, I see no difference in the vegetation. The trees and plants don't seem to be affected by rain or no rain. The only exception I have noticed is, that the flat leaf-like joints of the stem of the *Opuntias* are commencing to shrivel up just a

little on the surface; but the fleshy inside, which is eaten by the Indians, is apparently as juicy as ever.

And what an astonishing adaptation to natural conditions is not the *Cereus Pithaya*, this 20 to 35 feet high cactus, with candelabra-like branches, growing on the very driest and most barren ground, but yielding just now in these days, a most juicy, refreshing fruit in great numbers! The Indians on the western slopes of the Sierra Madre subsist at present almost entirely on this Pithaya fruit, and the same may at times be said of myself, as I find them wholesome and nourishing.

I am in these days in the old precincts of the Tubares, who are supposed to be extinct. I find that there are a few left yet, and I have photographed and measured two pure-bred ones here. Only four women and one man are yet able to talk the language at this place. I may hope to meet with some more farther down the river, but there are probably not twenty families left of the whole tribe, and most of them unable to speak the language; and only just a few pure-bred. They seem to be well made and of a nice, jolly disposition. I am taking down the language, which I think will prove of considerable interest, as there is very little known about this race. They are said to have spoken two entirely different languages; one a dialect of Nahuatl.

I shall now follow the river San Miguel down to San Ignacio, and from there, over Batopilas, retire again to the high Sierra, this time investigating the grand complex of cave dwellings of the *gentiles* (pagans) around Santa Ana. . . .

With kindest regards,

CARL LUMHOLTZ.

GEOGRAPHICAL NOTES.

BY

GEO. C. HURLBUT, *Librarian.*

AN INTERNATIONAL GEOGRAPHICAL CONFERENCE.—
The *Comptes Rendus* of the Paris Société de Géographie, No. 11, p. 246, has the following announcement : *

"The *National Geographic Society* of Washington sends notice of the International Conference on Geographical Sciences, organized by itself, in concert with the *American Geographical Society* of New York, on occasion of the Chicago Exposition. This Conference will take place in the Columbus Hall of the Institute of Arts, at Chicago, on the 27th of July next. The members of the Geographical Society (of Paris) who are in Chicago at that time are invited to be present (at the Conference)."

So far as the American Geographical Society is concerned, the announcement in the *Comptes Rendus* is absolutely incorrect. This Society is in no way responsible for the International Conference on Geographical Sciences to be held at Chicago.

*La *National Geographic Society* de Washington fait part de la Conférence internationale pour les sciences géographiques qu'elle a, de concert avec l'*American Geographical Society* de New York, organisée à l'occasion de l'Exposition de Chicago. Cette Conférence aura lieu dans le Columbus Hall de l'Institut des Arts, à Chicago, le 27 juillet prochain. Les membres de la Société de Géographie (de Paris) qui se trouveront à Chicago à cette époque sont invités à y assister.

The Council of the Society positively declined to take part in the proposed Conference, for the sufficient reason that the Congress assembled at Berne in the year 1891 had decided that the next International Congress on Geographical Sciences should meet in London, at a time to be determined by the Royal Geographical Society; and the Council felt bound to respect this decision.

TOSCANELLI.—Under this title Mr. G. Uzielli brought out at Florence in January last the first number of a publication intended to illustrate the geographical, historical, artistic and literary relations of Italy and America, and to strengthen the ties between the New Continent and "*the country to which it owes its discovery.*"

Especial attention will be paid to the documents relating to the age of discovery and the ancient history of America, to be found in the Italian archives and libraries.

Toscanelli is written in French, and the numbers will appear at irregular intervals.

In his brief address to the reader Mr. Uzielli divides the glory of the discovery between Paolo dal Pozzo Toscanelli and Christopher Columbus. "It would be as difficult," he says, "to give the first place to the one or to the other of these two great men, as to establish a parallel between the head and the arm, between Louvois and Turenne, between Pitt and Wellington, between Bismarck and Moltke."

This is a matter of appreciation. Bismarck will do very well for a head, but the reader must be amazed

when he is asked to regard Turenne and Wellington as no more than the arms of Louvois and Pitt ; to say nothing of the chronology.

Mr. Uzielli seems to have looked too long and too lovingly at one figure,* and to have lost the sense of proportion. Toscanelli was undoubtedly a great man, but it may be affirmed, with or without the evidence of the twenty years' researches, that he does not divide with Columbus the glory of the discovery.

Mr. Uzielli speaks of impartiality,† but the tone of his address to the reader is exclusively Italian. According to him the discovery of America was the work of Italy, and of Italy alone ; for he does not mention the name of Spain. It is easy to believe that even the measure of renown accorded to Columbus is given, not to the man, but to the Italian ; so far does patriotism appear to prevail over Mr. Uzielli's respect for the truth of history.

The articles in this first number of the new magazine are full of interest.

Several relate to Toscanelli ; others to Columbus and to Vespucci.

Among these last are notices of some of Vespucci's manuscripts, hitherto unknown or overlooked. One of these is a volume of exercises in Italian and Latin, composed, as Mr. Uzielli thinks, between the years 1480 and 1490. Three pages of this MS. are given in facsimile.

* He says, in foot note No. 3 on p. 3, that he has devoted twenty years to his researches on Toscanelli.

† Notre but étant surtout de recueillir des faits, et non de faire des appréciations, nous accueillerons de préférence dans le "TOSCANELLI" les articles ayant des pièces à l'appui et les critiques faites avec une méthode impartiale et positive.
—*Toscanelli*, p. 2.

It was Mr. Uzielli himself who discovered the origin of the other MSS. These are the letters of Guidantonio Vespucci, Florentine ambassador to France, written in 1478-1480, when Amerigo was attached to the embassy. Mr. Uzielli, struck with the resemblance between the handwriting of these despatches and that of Vespucci's book of exercises, called in the best palæographers, and is supported by them in his conclusion that the letters were written, and probably composed, by Amerigo; though the handwriting does not always imply the composition of a paper.

In another article Mr. Uzielli defends, with his well-known learning and ingenuity, the authenticity of Piero Vaglienti's manuscript relation of the voyages of Vespucci.

A document, to which some importance is attached, is Verino's Latin poem, supposed to have been written in 1482 in honor of Toscanelli, who died early in that year. The poet declares that Toscanelli ought to have lived forever, that such a philosopher rarely appeared upon earth, that he was Pythagoras and Hippocrates and Ptolemy, that he was an angel for purity of life, and that his fame will increase to the end of time. Rhapsodies like this are common enough in literature, but Mr. Uzielli takes Verino seriously, and adds a commentary with notes, one of which is a curiosity:

"In order to avoid other explanations, I apprise the reader that I profess a kind of agnosticism which differs little from that of Darwin." *

This bit of autobiography may be useful to some future Verino.

* Pour éviter d'autres explications, je préviens le lecteur que je professe un genre d'agnosticisme qui diffère peu de celui de Darwin.—*Toscanelli*, p. 17, note 2.

Attention is called, on page 40, to the lack of special works and collections of books in the public libraries of Florence. Among the deficiencies are the atlases of Jomard, Santarem, Kunstmann, Fischer and Kretschmer, the collections of the Hakluyt Society, the Schéfer-Cordier *Recueil*, Navarrete, Las Casas, many of HARRISSE's writings, Yule's Marco Polo, and others.

On the same page Mr. Uzielli prints the following exact list of the Parts and Volumes, which make up the great Italian collection of documents relating to Columbus, now in course of publication, with the names of the scholars charged with the preparation of the work :

First Part (3 volumes).

CESARE DE LOLLIS, *A Complete Collection in chronological order of the known writings of Christopher Columbus.*

Two volumes of text, and one volume containing the heliotype reproduction of the writings of Christopher Columbus with the transcription on the opposite page.

Second Part (3 volumes).

LUIGI TOMMASO BELGRANO and MARCELLO STAGLIENO, *Private Documents of Christopher Columbus and his family* (1 vol.).

Official Documents, relating to Christopher Columbus, published from the MS. in the Archives of the Ministry for Foreign Affairs at Paris, with variants from those in the Genoese Archives (1 vol.).

CORNELIO DE' SIMONI, *Columbian Questions*—ALBERTO SALVAGNINI, *Christopher Columbus and the Co-*

lombo Corsairs in the XV. Century—ACHILLE NERI, *The Portraits of Christopher Columbus*—UMBERTO ROSSI, *The Medals of Christopher Columbus* (1 vol.).

Third Part (2 volumes).

GUGLIELMO BERCHET, *Italian Sources for the Discovery of the New World—Preface and Official Documents* (1 vol.)—*Contemporary Narratives* (1 vol.).

Fourth Part (2 volumes).

ENRICO ALBERTO DE ALBERTIS, *The Art of Navigation in the time of Christopher Columbus* (1 vol.). P. TIMOTEO BERTELLI, *Magnetic Declination and its Variation in the Space discovered by Christopher Columbus*. VINCENZO BELLIO, *Ancient Geographical Charts relating to America which are found in Italy*: with heliotype reproduction of the most important among them.

Fifth Part (3 volumes).

GIOVANNI CELORIA and GUSTAVO UZIELLI, *Paolo dal Pozzo Toscanelli, Florentine astronomer and geographer of the XV. Century (1397-1482)*, 1 vol. with maps—GIUSEPPE PENNESI, *Peter Martyr of Anghiera*. PROSPERO PERAGALLO, *Leone Pancaldo*. LUIGI HUGUES, *Amerigo Vespucci, Giovanni da Verrazzano and Battista Genovese*. VINCENZO BELLEMO, *John Cabot*—ANDREA DA MOSTO, *Antonio Pigafetta, with the reproduction of the MS. in the Ambrosian Library at Milan with its drawings*—MARIO ALLEGRI, *Girolamo Benzoni* (2 vols.).

Sixth Part (1 volume.)

GIUSEPPE FUMAGALLA, with the assistance of PIETRO AMAT DI SAN FILIPPO, *Italian Bibliography of printed works relating to Christopher Columbus and the Discovery of America.*

THE HODGKINS FUND.—The Smithsonian Institution has issued the following circular concerning the Hodgkins Fund Prizes :

In October, 1891, Mr. Thomas George Hodgkins, of Setauket, New York, made a donation to the Smithsonian Institution, the income from a part of which was to be devoted "to the increase and diffusion of more exact knowledge in regard to the nature and properties of atmospheric air in connection with the welfare of man." The Smithsonian Institution now announces the following prizes to be awarded if satisfactory papers be offered in competition:—1. A prize of \$10,000 for a treatise embodying some new and important discovery in regard to the nature or properties of atmospheric air. These properties may be considered in their bearing upon any or all of the sciences—*e.g.*, not only in regard to meteorology, but in connection with hygiene, or with any department whatever of biological or physical knowledge. 2. A prize of \$2000 for the most satisfactory essay upon—(a) The known properties of atmospheric air considered in their relationships to research in every department of natural science, and the importance of a study of the atmosphere considered in view of these relationships. (b) The proper direction of future research in connection with the imperfections of our knowledge of atmospheric air, and of the connections of that knowledge with other sciences. The essay, as a whole, should tend to indicate the path best calculated to lead to worthy results in connection with the future administration of the Hodgkins foundation. 3. A prize of \$1000 for the best popular treatise upon atmospheric air, its properties and relationships (including those to hygiene, physical and mental). This essay need not exceed 20,000 words in length; it should be written in simple language and be suitable for publication for popular instruction. 4. A medal will be established, under the name of the Hodgkins Medal of the Smithsonian Institution, which will be awarded annually or biennially, for important contributions to our knowledge of the nature and properties of atmospheric air, or for practical applications of our existing knowledge of them to the welfare of mankind. This medal will be of gold, and will be accompanied by a duplicate impression in silver or bronze. The treatises may be written in English, French, German, or Italian, and should be sent to the secretary of the Smithsonian Institution, Washington, before July 1, 1894, except those in competition for the first prize, the sending of which may be delayed until December 31, 1894.

The papers will be examined, and prizes awarded, by a committee to be ap-

pointed as follows: one member by the Secretary of the Smithsonian Institution, one member by the president of the National Academy of Sciences, one by the president, *pro tempore*, of the American Association for the Advancement of Science; and the committee will act together with the secretary of the Smithsonian Institution as member, *ex-officio*.

The right is reserved to award no prize if, in the judgment of the committee, no contribution is offered of sufficient merit to warrant an award.

An advisory committee of not more than three European men of science may be added at the discretion of the Committee of Award.

If no disposition be made of the first prize at the time now announced, the Institution may continue it until a later date, should it be made evident that important investigations relative to its object are in progress, the results of which it is intended to offer in competition for the prize. The Smithsonian Institution reserves the right to limit or modify the conditions for this prize after December 1, 1894, should it be found necessary. Should any of the minor prizes not be awarded to papers sent in before July 1, 1894, the said prizes will be withdrawn from competition.

A principal motive for offering these prizes is to call attention to the Hodgkins Fund, and the purposes for which it exists, and accordingly this circular is sent to the principal universities, and to all learned societies known to the Institution, as well as to representative men of science in every nation. Suggestions and recommendations in regard to the most effective application of this fund are invited.

It is probable that special grants of money may be made to specialists engaged in original investigation upon atmospheric air and its properties. Applications for grants of this nature should have the endorsement of some recognized academy of sciences or other institutions of learning, and should be accompanied by evidences of the capacity of the applicant in the form of at least one memoir already published by him, based upon original investigation.

To prevent misapprehension of the founder's wishes, it is repeated that the discoveries or applications, proper to be brought to the consideration of the Committee of Award, may be in the field of any science or any art, without restriction; provided only that they have to do with "the nature and properties of atmospheric air in connection with the welfare of man."

Information of any kind desired by persons intending to become competitors will be furnished on application.

All communications in regard to the Hodgkins Fund, the Hodgkins Prizes, the Hodgkins Medals, and the Hodgkins Fund Publications, or applications for grants of money, should be addressed to S. P. Langley, Secretary of the Smithsonian Institution, Washington, U. S. A.

WASHINGTON March 31, 1893.

THE MOVEMENTS OF OUR POPULATION.—In a paper contributed to the *National Geographic Magazine*, Vol. V., pp. 21-44, and illustrated with plates and

tables, Mr. Henry Gannett analyzes the Census returns of the United States from 1790 to 1890, and presents many interesting facts. The first table shows the population at each successive decade, with the rate of increase.

In 1790 the people numbered 3,929,214; in 1890 they were 62,622,250. The highest rate of increase was for the ten years ending with 1810, 36.38 per cent.; the lowest for the period 1860-1870, 22.66 per cent. For the decade ending with 1880 the increase was 30.07 per cent., but it fell in the next ten years to 24.85 per cent.

In 1790 the area of the country was 827,844 square miles, and the density of population was 4.75 to the square mile. In 1890 the area had increased to 3,603,884 square miles, and the density to 17.37. In southern New England the density is as great as in some of the European countries, Rhode Island having 318 to the square mile, and Massachusetts 278.

The Census classes as "Urban Population" the inhabitants of all cities of 8,000, or more. A century ago these cities were six in number, and the urban population was one thirty-third of the entire population. To-day the cities of 8,000 inhabitants, or more, number 443, and they contain 29 per cent. of the population. The increase in the cities has been greater during the past decade than at any previous time.

The average size of families has diminished continuously from 5.55 in 1850 to 4.93 in 1890. The largest families are in the South, the smallest in New England and the frontier states.

As regards race, the population is composed of about

55,000,000 whites, 7,500,000 Africans and mixed bloods, 150,000 Chinese and Japanese, and a few hundred thousand Indians. In 1790 the colored race formed one-fifth of the population; in 1890 the proportion had fallen to less than one-eighth. The rate of increase of this race has apparently surpassed that of the whites in the two decades, 1800-1810 and 1870-1880; in every other it was inferior, and in 1890 the percentages were: White, 26.68; Colored, 13.11.

The immigration from Europe began to be of importance in the decade 1830-1840, when it amounted to 599,125; for the next ten years it was 1,713,251; then, for the next four decades, successively, 2,598,214, 2,314,824, 2,812,191, and 5,246,613. These totals include the arrivals from Canada.

Of the entire number, 4,504,128 are Germans, 5,911,454 natives of the United Kingdom (3,481,074 Irish), and 1,067,548 Scandinavians. Other nationalities are represented by smaller numbers.

In 1890 the native white population numbered 45,863,008; the foreign born 9,248,547. All the foreign born are in the States north of Mason and Dixon's line and in the Western States and Territories; the Southern States having received practically no European immigration. Adding to those of foreign birth the number of those born of foreign parents, Mr. Gannett estimates the foreign element of the white population at 25,000,000.

This element constitutes 45 per cent. of the inhabitants in the Northern States east of the plains. In Massachusetts and New York it amounts to 56 per cent., in Connecticut to 50, and in Rhode Island to 58 per

cent., while in Wisconsin and Minnesota those of foreign blood amount to three-fourths, and in North Dakota to four-fifths of the population.

In the large cities the foreigners preponderate. In Boston they constitute 70 per cent, in Brooklyn 72, in New York 82, in Buffalo 78, in Chicago 80, in Detroit 79 and in Milwaukee 87 per cent.

The whites of native extraction are estimated at 30,000,000, those of foreign extraction at 25,000,000, and the colored at 7,500,000.

Mr. Gannett does not seem to regard these figures with satisfaction; but he comforts himself with the reflection that 10,500,000 of the foreign whites, being of British and Irish origin, may be added to the natives to secure for some time the predominance of the British blood.

THE GEOGRAPHICAL CLUB OF PHILADELPHIA.—The *Bulletin* of this Club, Vol. I, No. 1, dated January, 1893, is devoted to a handsomely illustrated paper on Mountain Exploration by Edwin Swift Balch.

Mr. Balch has done a great deal of mountaineering and has read much on the subject, and, like an enthusiast, he magnifies his office. Mountaineering, he says, belongs rather to the field of geographical exploration, and climbing proper is only a branch of it. If, as Boileau affirms, it requires time and taste to write a poem, it is a matter of time and practice to make a good mountaineer. The best way is, according to Mr. Balch, to do a great many small climbs at first without a guide, so as to acquire proficiency, and occasionally to take a climb with a good guide in order to study his methods.

An important rule, too often forgotten, is to learn to walk very slowly and very steadily.

Mr. Balch's essay is entertaining and instructive, but it would have been improved by revision. There is a bad slip on p. 11:

"All the Caucasus Mountains, a range almost as large as Switzerland," etc.

The range of the Caucasus covers an area nearly four times the size of Switzerland.

Much worse than an error in superficial measurement is the following remark, on p. 5:

"To the great mountain of Nepal he affixes the name of a little Indian surveyor, 'Everest,' " etc.

The reader of this feels some curiosity to know what manner of man he may be, who looks down on Sir George Everest as a little surveyor.

DOMESTIC REINDEER IN ALASKA.—Dr. Sheldon Jackson's report to Commissioner Harris, of the Bureau of Education, on the introduction of domestic reindeer into Alaska, has been issued by the Government as Senate Mis. Doc. No. 22, 52d Congress, 2d Session.

Sixteen reindeer were purchased in Siberia in 1891, and left on Amakuak and Unalaska Islands where they were found in good condition the next year, with an addition of two to their number. In 1892, five trips were made to Siberia and 175 reindeer were successfully landed at Port Clarence, the nearest good harbor on the American side. Reconnoissances previously made had proved that there was abundance of moss for pasturage in the neighborhood of the station at this place, where a house was built for the superintendent and his assistant. Four Siberians, acquainted with

the management of the reindeer, were placed in charge of the herd, and a number of Alaskan Eskimo were apprenticed to them. The expectation is that each Eskimo, as he learns the business, may be started in life with a small herd of his own, and that in this way the country may gradually be peopled with a hardy race, now threatened with extinction.

According to Dr. Jackson, these Eskimo are superior to those of Greenland and Labrador. He says that on the great rivers emptying into the Arctic they are a large race, and that at Kotzebue Sound he has met men and women six feet in height. The physical strength of the women is prodigious. We are told of one who walked off with a box of lead weighing 280 pounds; and of another who lifted into her birch-bark canoe a stone that weighed 800 pounds. If the birch-bark canoe had been less fragile, the stone might have weighed 1600 pounds, for the air of the North expands the mind as well as the muscles.

Dr. Jackson informs us that

Arctic and subarctic Alaska cover an empire in extent equal to nearly all Europe.

The best authorities estimate the area of Alaska at 600,000 square miles, and that of Europe at nearly 3,800,000.

Dr. Jackson, who is General Agent of Education in Alaska, does not know the size of Europe, but he must know that the great outlying territory, in which he works, covers about one-sixth of the surface of the United States. Does he really believe that the area of the United States is twice as great as that of all North America?

COSTA-RICA AT THE MADRID EXHIBITION, 1892.*—The Historical-American Exhibition at Madrid, in the autumn of 1892, was remarkable for the wealth of its collections illustrating in every way the life of the American races before the Conquest.

This *catalogue raisonné*, prepared by Messrs. Peralta and Alfaro, describes a great number of objects in gold, stone and pottery, native arms and utensils, specimens of birds, fossils, etc., from the National Museum of Costa-Rica and the cabinets of private collectors.

In the Introduction, which has also been issued as a separate publication,† Mr. Peralta sketches the physical features of Costa Rica, and the condition of the natives, passing rapidly towards extinction in spite of the efforts made to improve their lot. The Guatusos, who inhabit the neighborhood of Lake Nicaragua and the river San Juan, make a miserable living by hunting and fishing, and raise Indian corn and plantains in a small way. The Talamancas, the Térrabas and the Borucas occupy the Atlantic and Pacific slopes of the mountains on the Colombian frontier. Besides these natives, who number altogether less than twenty thousand, there are in the interior settlements a few scanty remnants of the pre-Columbian races, almost without tradition of their forefathers, and almost totally ignorant of their arts and industries.

* Etnología Centro-Americana—Catálogo Razonado de los Objetos Arqueológicos de la República de Costa-Rica en la Exposición Histórico-Americana de Madrid—1892, por D. Manuel M. de Peralta y D. Anastasio Alfaro.

8º

Madrid, 1893.

† Etnología Centro-Americana—Apuntes para un libro sobre los Aborígenes de Costa Rica por Manuel M. de Peralta. 8vo. Madrid, 1893.

At the time of the Conquest the principal tribes that occupied the territory of Costa Rica were the Náhuas (Aztecs) and Mangles (Chorotegas), Güetares, Viceitas, Térrabas, Changuenes, Guaymies, Quepos, Cotos, and Borucas. The Náhuas, at least, came from the north ; the Mangles had their settlements on the shores of the lakes Nicaragua and Managua, and extended to the southern parts of Mexico, where their language was still spoken at Acalá a few years ago. Mr. Peralta does not attempt to determine the ethnic affinities of the Güetares, though it seems certain that they underwent the Mexican influence.

That they were not entirely savage, is sufficiently established by their work in gold ornaments, and artistically worked stones discovered at Aguacaliente and Turrialba, and they were honorably distinguished from their neighbors in the north, and from the Chorotegas, by the fact that they did not practise cannibalism.

There are marked affinities between the Guaymies, Térrabas, Changuenes, and Borucas, and the most eastern tribes of the Isthmus.

These peoples of Costa Rica, now so feebly represented, are believed to have numbered a hundred thousand souls in the year 1564.

The Náhuas and Mangles in the Nicoya district have completely disappeared.

Mr. Peralta's thorough knowledge of his subject enables him to correct errors in ethnography and geography, made by Latham and Pimentel.

THE ROYAL GEOGRAPHICAL SOCIETY'S AWARDS.—
At the Annual Meeting of the Royal Geographical

Society, held on the 29th of May, the Founder's Gold Medal was presented to Frederick Courtney Selous, for his explorations in British South Africa ; and the Patron's Gold Medal to W. Woodville Rockhill, for his travels and explorations in Western China, the Koko Nor region and Tibet.

Mr. R. W. Senior received the Murchison Grant, in recognition of his laborious surveys continued for several years in the Punjab Himalayas ; Mr. Henry O. Forbes, the Gill Memorial for his work of exploration in New Guinea, the Malay Archipelago and the Chatham Islands ; and to Mr. Charles Hose was awarded the Cuthbert Peek Grant, for observations and explorations in Saráwak, Borneo.

ADMISSION OF LADIES TO THE ROYAL GEOGRAPHICAL SOCIETY.—The Annual Meeting of the Royal Geographical Society, held May 29, and fully reported in the London *Times*, was of unusual interest.

The report of the Council was taken as read, and its adoption was moved, when a Fellow arose to ask the meaning of the following passage :

" Membership.—The question of electing ladies as ordinary fellows was considered by a special general meeting on April 24, when it was decided in the negative by a considerable majority. The council regard this vote (unless hereafter rescinded by a general meeting) as conclusive against any further election of ladies as ordinary fellows, without prejudice to the *status* of those already elected."

He moved that the words from *without* to *elected* be omitted. The President ruled against the power to make this motion, and the Fellow then moved the rejection of the report. The motion was put and lost, and the report was adopted by a vote of 237 ayes to 144 noes.

After the presentation of medals and prizes, and the delivery of the President's Annual Address,

The Earl of Mayo desired to move that the vote of April 24 be rescinded, or, to put it in another form, that the council should continue to elect ladies as they had done before. They had already elected 22, and in the president's own words they wanted them and a great many more. He hoped the resolution would be passed on the ground that a great many other learned societies in England and Scotland had ladies for their members, and he did not see why the Royal Geographical Society should not follow their example. He moved :—"That the council be requested to elect more ladies as Fellows." The question as to the limit in the number to be so elected was a matter of detail.

It was moved after discussion, that the question be postponed ; when

The Earl of Northbrook said that, having lately had the honor of being president of the Royal Asiatic Society, which considered itself far more important than the Royal Geographical Society, dealing as it did with the ancient languages of the world and requiring great knowledge and skill on the part of its members, he desired to say that the Royal Asiatic Society willingly and readily, and with great satisfaction elected ladies. Not only so, but the society was served by a very learned and able lady as assistant secretary. When he had the honor of being the president of the Royal Asiatic Society, ladies read most able papers before it, and he most heartily supported the proposal that ladies should be elected as Fellows of the Royal Geographical Society.

He was followed by

Sir John Lubbock who, as president of the Anthropological Society, said that the presence of ladies had not in any way detracted from the usefulness of his society.

General Strachey spoke to the same effect. He considered it most desirable that ladies should be admitted as members of the society, and in asking them to postpone their decision on the subject he did so to show that it was not desired in any way to act tyrannically or unfairly. So far as they had any means of judging, the general feeling of the Fellows was in favor of the action of the council in permitting the election of ladies.

Sir William Flower agreed with the two last speakers in asking Lord Mayo to postpone his motion. He remembered the time, 40 years ago, when ladies were not admitted to their meetings, and a distinguished Swedish lady traveler was refused admission on presenting herself at the doors. Now they freely admitted ladies to their meetings, and it was but a small step further to allow them to pay their subscriptions.

After some further discussion Lord Mayo consented to bring the matter before the society again at a meeting to be summoned in accordance with the regulations of the society.

The *Times* has printed some entertaining letters on the subject. The Hon. G. N. Curzon, M.P., who is a member of the Council, writes from the House of Commons to express his belief that the four good letters, F.R.G.S., will sink to a lower market value "if they are paraded by vagrant womanhood on visiting cards and in books."

One Fellow, evidently young and dangerously beautiful, declares that his family will not allow him to attend meetings open to women in their own right.

It appears, however, from a letter written by Admiral McClintock, that the objection is to the manner, rather than to the matter, of the action taken by the Council. After reciting the history of the innovation, the Admiral concludes :

Among the dissentient Fellows there are some who were ready to vote definitively against the admission of ladies, there were others ready to admit them with restriction as to sitting on the council, there were others who would receive them as Associate Fellows; but the one point upon which we were unanimous was the legal point of the action of the council having been *ultra vires*, and the absolute necessity of having the whole question submitted to a general meeting, so that what the Fellows generally wished might be done entirely and unquestionably under the provisions of the charter.

Had the dissentient Fellows been permitted at the special general meeting to state their views and their positions, which was not at all, as has been ignorantly assumed, against the election of ladies, provided that such elections were carried through under the provisions of the charter, all the heat, all the attribution of bad motives, all dispute would have been avoided, of the injurious effect of which upon any society no one can be more sensible than are the dissentient Fellows, whose only object has been that, in so important a question as a change in the constitution of the society, whatever is done should be done legally and in accord with the wishes of the entire body.

Some misapprehensions with regard to matters of fact are corrected by Mr. Douglas W. Freshfield, a member of the Council for fifteen years and for twelve years one of the honorary secretaries of the Royal

Geographical Society, in a letter to the *Times* of June 3. He says that the principle of the admission of ladies to the Society was not accepted in consequence of any recent incident. It was affirmed unanimously by the Council as long ago as 1887, and recognized again in 1890. Mr. Freshfield disposes of a good many so-called arguments against the admission of ladies by quoting the charter of the Society, according to which every "loving subject" of the Queen who desires to assist in promoting and promulgating geographical knowledge is a competent Fellow.

MEDALS DISTRIBUTED BY THE PARIS SOCIÉTÉ DE GÉOGRAPHIE.—The great gold medal of the Paris Geographical Society has been awarded to Commandant Monteil for his remarkable journey from Senegal to Tripoli by way of Lake Tchad in 1890–1892.

The other medals adjudged are: The Erhard gold medal, to Messrs. Cabrisy, Blanc and Petit, for relief maps; the Laroquette gold medal to Fridtjof Nansen, for the crossing of Greenland, 1888; the Léon Dewez gold medal to M. J. Dybowski, for his journey from Loango to the Shari river, 1891–1892; the Malte-Brun gold medal to M. C. Lenthéric, for his volume entitled *Le Rhône, Histoire d'un Fleuve*, 1892; the Alphonse de Montherot silver medal to M. A. A. Fauvel, for his work on the province of Shan-Tung; the Louise Bourbonnaud gold medal to M. Teisserenc de Bort, for his travels in the Sahara, 1883–1890; the Charles Grad silver medal to Count de Saint Saud, for his studies on the Pyrenees, 1877–1892; and the Pierre-Félix Fournier prize to M. G. Capus, for his travels in Central Asia and his work, *À travers le Royaume de Tamerlan*.

THE MEDALS OF THE BERLIN GESELLSCHAFT FÜR ERDKUNDE.—The Humboldt gold Medal of the Berlin Geographical Society has been bestowed this year upon Dr. John Murray, of the *Challenger* scientific staff.

Two African explorers, Dr. Franz Stuhlmann and Dr. Oskar Baumann, received at the same time the honor of the Karl Ritter Medal; the former for his ample and exact observations in Central Africa made in association with Emin Pasha; the latter for his remarkable journeys and explorations in the Congo State and the island of Fernando Po and in the lake regions of the continent.

MOUNTAIN RESERVOIRS IN ALSACE.—Under this heading the London *Times*, of May 15, publishes the following information, condensed from an article in the *Economiste Français* :

One of the first undertakings was to regulate the two lakes in the valley of Orbey, known as the Black Lake and the White Lake, these two now holding 3,000,000 cubic metres of water, so that the cotton and other factories in the valley of Orbey are now able to work all the year round, and there is a constant irrigation of the pastures. The total cost did not exceed £3,000, and the annual expenditure is only about £160. A second reservoir was constructed near Sewen, in the valley of Masseraux, not far from the celebrated mountain pass known as the Ballon d'Alsace. This reservoir, surrounded by a wall nearly 90 feet high, contains 1,100,000 cubic metres of water, and is considered such a fine piece of work that a relief plan of it has been sent to the Chicago Exhibition. In 1890 a reservoir was built at Allenweiler, in order to regulate the waters of the Fecht, a torrent which has at various times done great damage; and this reservoir, together with three small lakes, also in the valley of Münster, holds about 2,000,000 cubic metres. The latest work, commenced last year, was the transformation of the Lauch, in the valley of Guebwiller, into an artificial lake large enough to hold the rain water which comes down from the surrounding heights and to store it until it is required. This reservoir will have an area of 28 acres and will hold 800,000 cubic metres of water, and, as it is fed by rain water from a surface of over 1,200 acres, as much as 3½ million of cubic metres will be collected in the course of the year—that is, when there is an average rainfall. The cost of construction is estimated at £43,250, of which all but £6,000, contributed by the town of Guebwiller

and the factory owners of the valley, is found by the State. The reservoir will be finished next year, and will provide motive power for 30 factories and irrigate 4,000 acres of pasture.

A SPECIAL POLITICAL MAP OF ITALY,* showing the civil, military and ecclesiastical divisions and subdivisions of the country, with explanatory text, has been published by the Istituto Cartografico Italiano of Rome.

It forms an atlas of 20 sheets, each about 20 inches square, drawn to a scale of 1:500,000, and colored with singular delicacy and good taste.

Notwithstanding the apparent limitations of the title, the map is useful for general reference, though it must be remembered that the longitudes are calculated from the meridian of Rome.

THE CORINTH CANAL.—The canal across the Isthmus of Corinth was to be formally opened at the end of June. The work was begun in 1882, one of many enterprises that followed in the wake of the Panama project. The canal unites the Gulf of Corinth with the Gulf of Ægina, and makes a true island of the Peloponnesus. It is 4 miles in length, 72 feet wide, and 26 feet in depth.

The British Consul at Patras in his last report says :

It will prove of great benefit to the various ports in the vicinity, for steamship companies trading with Constantinople, the Black Sea, Asia Minor, and the Ægean

* Carta Politica Speciale del Regno d'Italia, colla Indicazione delle Circo-scrizioni Amministrative (comprese quelle dei singoli Comuni) e delle Nuove Circo-scrizioni dei Mandamenti e dei Collegi Elettorali e colle Tabelle di altre importanti Circo-scrizioni Territoriali.

Sulla Scala di 1:500,000.

Costruita e disegnata da G. E. Fritzsche su dati riveduti da L. Grimaldi Casta della Direzione Generale di Statistica.

Eseguita e pubblicata dall' Istituto Cartografico Italiano.

Prezzo L. 25.

Roma, 1893.

Archipelago have announced their intention of passing their steamers through the canal, and this will afford the passengers the satisfaction of a sail through the Gulf of Corinth and the Saronic Gulf, both of which are very beautiful and crowded with points of interest. Passengers landing at Patras can visit Olympia and rejoin their ship the next day. At Itea, in the Gulf of Salona, they are within a few hours' walk of the site of Delphi, where excavations are being carried on by the French Archæological School, and whence the ascent of Parnassus can easily be accomplished in the autumn and summer. At Corinth the site of the old town and Acrocorinth, whence a lovely view is obtained, may be visited in a few hours. Shipping generally will benefit by the opening of the canal, for the gulf and its approaches are at present very badly lighted, and it will be necessary, of course, to facilitate the passage of steamers at all seasons and hours, and to place lights at the various dangerous points.

SEVERE FROST AT HONGKONG.—Under this heading *Nature*, for April 6, 1893, publishes some correspondence on the cold weather experienced at Hongkong in January last. The latitude is $22^{\circ} 16' 30''$ N., and the mean temperature for the winter months is 66° Fahr.

January 15, the temperature fell at the Botanic Gardens, 350 feet above sea-level, to 39° , on the 16th to 35° , and on the 17th to 31° . At Canton, on the 16th, the thermometer stood at 25° . On the peninsula of Kowloon, opposite to Victoria, the cold seems to have been greater than at Hongkong; ice was seen on pools of water within fifty feet of sea-level and at the Kowloon Docks there was ice at the bottom of an empty dock. The rigging of ships in the harbor was coated with ice; and on Victoria Peak, 1818 feet above the sea, a casing of perfectly transparent solid ice, $5\frac{1}{2}$ inches in circumference, formed on the blades and bents of grass. This was on the windward side of the hill, but even on the lee side, the coating was about 3 inches in circumference. Evergreen shrubs and trees carried on their leaves solid coverings of ice $\frac{3}{8}$ of an inch in thickness. Many of the limbs snapped off under the

weight ; and the accumulation of ice broke down many of the telephone wires.

Many of the plants in the Gardens were injured and not a few were killed.

Mr. Thiselton-Dyer, of the Royal Gardens, Kew, makes the following remarks :

The importance of such facts as these in connection with geographical distribution can hardly be overrated. It is customary to compare the range of a plant with the corresponding mean annual temperature. But it is obvious that the exterminating effect of occasional low temperature must override every other condition. An island is often the last refuge of a species not found elsewhere. Such a frost as occurred in Hongkong would erase the Double Cocoa-nut in all probability from the face of creation, if it occurred in the Seychelles.* In any case islands are not easily restocked except with littoral vegetations and the trees distributed by carphophagous birds. It seems evident therefore that the geographical distribution of plants may still be influenced by causes which are catastrophic in their nature.

DELCOMMUNE'S EXPEDITION.—The following telegram supplements the information contained in those published in the BULLETIN for March, p. 167 :

LISBON, April 11, 1893.

. . . . The Luapula is the principal branch of the Congo. The Lualaba is an affluent; it enters the Luapula at Ankorro. The Lukuga joins the river below that point ; as an outlet of the Tanganika it has no importance, and it is not navigable. Lake Lanji does not exist. Crossed the Congo between Ankorro and the confluence with the Lukuga. Up stream as far as Lake Kassali, and beyond it, the river is completely open ; down stream, there are some rapids. . . .—DELCOMMUNE.

According to *Le Mouvement Géographique*, M. Delcommune gave fuller details of his exploration at a meeting, held in Brussels, April 20. He said: "We have studied more than 300 kilomètres (186 miles) of the course of the Lomami previously unknown. We discovered Lake Kassali, and traced the Lufira river, which is interrupted by numerous rapids, and also the intricate course of the upper Lualaba with its impassable

* Between 4° and 5°, S. Latitude.

ble rapids at Nzilo, where we abandoned the 27 boats which had cost us two months' toil. After a stay at Bunkeia, we pushed on to the Tanganika, passing by Lake Moero. We then solved the problem of the Lukuga, which is the outlet of the great African lake (Tanganika is meant), and settled the fact that Lake Lanji does not exist. We ascended the Congo as far as the junction of the two great streams, the Luapula and the Lualaba, and satisfied ourselves by several observations that the former, which passes through Lakes Bangweolo and Moero, is the true Congo. The Luapula is not navigable where it leaves the Moero, but the Congo, from a little below the Lukuga to the Lualaba above Lake Upemba, is navigable for a length of more than 400 kilomètres (250 miles).

The results are : "That the shortest and safest route to the Tanganika is not that from the eastern coast, but the one by way of the Congo, passing by Bena-Lassambo, the terminus of steam navigation on the Sankuru. From this point a caravan would reach Albertville or Mpala, on the Tanganika, in 45 days.

"That a section of railway and a little work on the Lomami rapids would unite the Lomami and the Lualaba, which are separated at the proper point only by a distance of 80 kilomètres of level country.

"The regions traversed by the expedition were generally fertile, but unlike those of the upper and lower Congo in aspect, as well as in the flora and the fauna. In some places, such as Katanga, the population was sparse—the result of the slave trade—but on the Lukuga and the Lualaba, and in nearly all the vast territory of Baluba, it was of extraordinary density and

formed a vigorous and handsome race, secure in its strength against the raids of the slave hunters.

"This southern part of the Congo State, elevated as it is from 3000 to 5500 feet above the sea, enjoys an almost temperate climate, with a dry air and a constant breeze."

THE MAISTRE EXPEDITION.—*The Bulletin du Comité de l'Afrique Française* for June contains M. Maistre's report of his march from Kemo on the Ubangi river northward to Bagirmi, thence westward along the course of the Benue to the Niger, which was followed to Akassa, where the great river enters the Gulf of Guinea.

The party consisted of: MM. Maistre, Brunache, Clozel, Briquez, de Béhagle and Bonnel de Maisières, an escort of 60 Senegalese, and 115 carriers; in all, 181 persons.

Kemo was left June 29, 1892. The tribes first encountered, the Togbos and the Ndris, were friendly, and treaties were made with the Ndri chiefs. Soon after leaving their country, the guides deserted, and the march was continued by the compass through an uninhabited region covered with a dense growth of tall grasses.

On the ninth day a Mandjia village was seen; but the Senegalese scouts were received, on approaching, with a flight of arrows and assagais from an enemy, hidden in the tall grass. The column pushed on to the village, where efforts were made to parley with the enemy, but in vain. The natives abandoned their huts, leaving abundant provisions behind them, and carrying

the report that the whites had come to make war on the Mandjia. This hostile feeling was encountered for a month. At Bogada, about 125 miles north of Kemo, the Mandjia came to a conference and peace was made. Guides were furnished and on the 2d of September the party reached the Gribingi river, one of the eastern branches of the Shari. Following the right bank of the Gribingi through a marshy country inhabited by the friendly Akunga tribe, the expedition came to the Aretu, a people whose language was wholly unknown to the interpreters. At Mandjatezze, about 8° 39' N. Lat., the direction of the route was changed to the left toward the Sara country and Nachtigal's line of march, and for the next fifteen days difficulties of every sort multiplied.

The guides deserted, the food gave out, and the men had to live on the roots and the leaves. Weak as they were they had to keep on, sometimes up to the neck in the water of the swamps. At Kasinda, about 50 miles west of Mandjatezze, it was hoped that the men might rest ; but the natives showed hostility, and the march was resumed. After five days Garenki was reached. This village is on an island in the Bahar-Sara, which M. Maistre supposes to be a southern arm, or rather an affluent, of the Shari. The language of the people (the Sara) was still unintelligible, but at Gako some Mussulmans from Bagirmi were met, who spoke Arabic, and M. Brunache was able to talk with them. One of these Mussulmans, Si-Saïd, was an envoy from Bagirmi to the Sara peoples and his friendship was of the greatest service to the expedition. On the 21st of November, after crossing a very dry country, in which

the only water was drawn from deep wells sunk in the sand, M. Maistre and his party arrived at Laï, the residence of the King of the Gaberi. This town, with a population of 10,000, is situated on the right bank of the Logone, or Ba-Baï river.

The strangers were coldly received at first, but the chief soon became friendly and signed a treaty with them, in the hope, it was found, of inducing them to join him in an attack upon his neighbors. For two days the Frenchmen were escorted by a force of 2000 warriors; but M. Maistre refused to assist them, and continued his route. He was at first kindly received at the next village, and then suddenly attacked. The village was burned to punish this treachery, and the line of march was changed for some days. The wide plains of the Sudan gave place to broad plateaux, which form the dividing line between the waters of the Lake Tchad basin and those of the Benue. Near Tune village, in Laka, M. Clozel fell sick and a long halt became necessary. This was in December, and the march had hardly been resumed when M. Maistre's illness interrupted it for two weeks.* Soon after the party was joined by

* The Europeans in the Maistre Expedition were no more than a working force, but their experience emphasizes Lieut. Morgen's argument in his manual for the Conduct of War and Expeditions in Africa. He says: "So far as the number of Europeans is concerned—I speak here, as I do farther on, rather of a political or exploring expedition sent out for a long time than of a military expedition organized for a brief period in order to inflict chastisement—it can never be small enough. This sounds absurd, but it is unquestionably right. An expedition is sufficiently provided with Europeans if its conduct is made secure under all circumstances. The more white men the more luggage, and the greater the burden on the commander. The Europeans sicken much more easily than the blacks and must be much more carefully tended. I cannot leave a sick European, at least not in West Africa with its poor communications, even in the care of a friendly chief. The whole expedition must wait till the sick man can be moved, and

a caravan of Fulbe merchants returning to Yola, which was reached without accident. At that place the agent of the Royal Niger Company furnished supplies and transportation to Akassa.

The route followed by M. Maistre cuts in two, as he says, the greatest blank space on the map of Africa.

He refers to a mountain mass in the Bolo country, eight days' march to the west of Amazaga, as the probable source of several rivers: the Tomi, an affluent of the Kemo, from the right, the Nana and the Bahar Sara, which flow to the north, the Ombela, an affluent of the Ubangi, and perhaps, also, some affluent of the Sanga. The Gribingi, previously unknown, has been carefully mapped for more than 60 miles, and M.

even then he must be carried by at least four men, who could be better employed. In a word, too many white men are no help, but a hindrance, to the expedition.

Was nun die Anzahl der Europäer betrifft, so kann dieselbe—ich spreche hier, wie im Folgenden mehr von einer auf längere Zeit ausgesandten politischen oder Forschungs-Expedition, als von der nur für kurze Zeit zusammengestellten militärischen Straf-Expedition—nie klein genug sein. Dies klingt absurd, aber ist ohne Frage richtig.

Wenn nur die Führung der Expedition unter allen Umständen gesichert ist, dann ist sie auch genügend mit Europäern besetzt. Je mehr Weisse, desto mehr Gepäcklasten, aber auch desto mehr andere Last erwächst dem Führer. Die Europäer erkranken leichter, als die Schwarzen, und müssen viel rücksichtsvoller behandelt werden. Den erkrankten Europäer kann ich nicht—wenigstens nicht in West-Afrika bei den schlechten Verbindungen—selbst bei einem befreundeten Häuptling, zur Pflege zurücklassen.

Die ganze Expedition muss warten, bis derselbe wieder transportfähig ist, und schliesslich gebraucht man zur Tragen des Kranken mindestens vier Leute, die besser zu verwenden wären. Kurz und gut, zu viel Weisse sind keine Unterstützung, sondern ein *impedimentum* der Expedition.

pp. 19-20, *Kriegs- und Expeditionsführung in Afrika*, von C. Morgen, Premier-Lieutenant, a. l. s. d. 4. O/S Inf.-Reg. Nr. 63, Komm. zum Auswärtigen Amt. Berlin, 1893.

In Lieut. Morgen's opinion, three Europeans suffice for a party composed of 30 soldiers and 120 carriers.

Maistre believes it to be a branch of the Shari; its course is nearly parallel with that of the Ba Mingi, a river mentioned by the natives, and the two meet a little to the north of Mandjatezze. M. Maistre is inclined to identify the Ba Mingi with Nachtigal's Bahr el Abiad, and the Gribingi with his Bahr el Azrek. (These Arab names, he notes, are unknown in the country). MM. Brunache and Briquez, who were with the Dybowski expedition, suggest that the Kukuru river crossed by that expedition may be the Gribingi.

The Bahar Sara, flowing from the south to the north, is identified with the Bahar Kuti of Nachtigal; but M. Maistre, from information given by the natives, supposes that this river, instead of flowing from the east, is in its upper course almost parallel with the meridian, and has its source in about 6° N. Lat.

M. Maistre finds it impossible to speak with certainty concerning the communication between the Shari and the Logone, of which the natives made report to Barth and Nachtigal; but he does not believe in its existence, "having little faith *à priori* in two rivers communicating with each other." The skepticism is reasonable, in spite of the Cassiquiari river; but M. Maistre quotes the statement of the natives that the Bahar Nam, a swamp which the expedition crossed at Gako, establishes a communication at times of flood between the Bahar Sara and the Logone by Bangul, to the south of Lai. He admits the possibility of a water passage at such times, but denies the river connexion.

Beyond the Logone the expedition determined the western limit of the Lake Tchad basin.

The information furnished by the natives went to

show that the Mayo Kebbi does not issue from the Tuburi marsh, as Barth was ready to admit ; and in this case there can be no communication between the Benue and the Logone.

At Palem the expedition touched the route followed by Nachtigal and so united the Congo with the regions of Northern Africa.

The tribes encountered were (going North and then West): the Togbos, comparatively unimportant ; the Ndris, a strong tribe, occupying a broad band of country parallel with the Ubangi ; the Mandjia, very numerous and much more powerful than the Ndris and, at the same time, suspicious and of low intelligence ; the Wia-Wia and the Awaka, both resembling the Mandjia, though more intelligent and more tractable ; the Akunga, on the right bank of the Gribingi where it turns abruptly to the north, a fine race, much superior mentally and physically to those already named ; the Aretu, in the country between the Ba Mingi and the Gribingi and on the left bank of the latter ; the great Sara tribe, whose country begins at Mandjatezze. Physically the Saras are the finest men M. Maistre had seen in Africa, with an average stature, according to measurement, of 1.78 metres (5 feet 10 inches). They are very warlike. Those settled farther north pay tribute to the king of Bagirmi, but the others have repelled all the attacks of the Mussulmans and preserve their independence. Next beyond the Saras are the Tummok, subject to Bagirmi, and apparently ruined by war. Palem and Gundi, important places in Nachtigal's day, are almost destroyed. The Gaberi occupy both banks of the Logone. They are excellent

horsemen and fighters, who have held their own against Bagirmi. Their chief town is Laï, on the right bank of the river. The tribes farther to the west are few and small, the most important being those of Laka, to the south of Tuburi and Lame.

EMIN PASHA.—The Brussels papers published at the end of May the following letter, written by the Arab Resident at Stanley Falls to his uncle Tipu Tip at Zanzibar :

"Saïd-ben-Abed set out from Kirondo to meet between Unyoro and Wadelai one of his slaves named Kironga-Ronga, who had bought a great deal of ivory, when he encountered Emin Pasha, who was on the march against him.

They fought for two days; the third day Emin was defeated, and beat a retreat after losing a good many of his people. The fourth day Saïd-ben-Abed's men went in pursuit of Emin and overtook him, and they fought again. Emin was taken and killed, with his whole force, and there can be none of his men remaining but those he may have left at Wadelai, or elsewhere."

This letter is dated Dec. 3, 1892, and there is little reason to doubt its substantial correctness.

Ten years ago the rising in the Sudan cut off the communication between Emin Bey, then Governor of the Egyptian Equatorial Provinces, and the authorities at Cairo. For three years Emin was lost to the world, as if he were in another planet. Then came the news of his beleaguered position at Wadelai, the movement for his relief, the expedition of Stanley, the forced rescue, and the entrance of Emin into the German service and, with this, the general loss of interest in his career. Like Stanley, he seemed to have done his work, and men busied themselves with him no more; but his figure remains one of the most striking in the story of African adventure.

REMARKABLE RAINS.—Mr. Clement L. Wragge, Government Meteorologist of Queensland, writes to *Nature*, of May 4, some particulars of the extraordinary rainfall at Crohamhurst, on the western slope of Mont Blanc, a peak on a spur of the D'Aguilar Range, South Eastern Queensland.

The approximate latitude and longitude are : $26^{\circ} 50'$ S. Lat., $152^{\circ} 55'$ E. Long.

There fell at Crohamhurst for the 24 hours ending 9 A.M., February 1, 1893, 10.775 inches rain ; February 2, 20.056 inches ; February 3, 35.714 inches ; February 4, 10.760 inches.

Mr Wragge believes that the fall on the 3d of February "beats the world's record."

Mr. E. Douglas Archibald, in a communication to the same journal for May 25, recalls the fact that the heaviest known rainfall for 24 hours is that which occurred on the 14th of June, 1876, at Chirapunji, in the Khasia hills, Assam, when 40.8 inches fell ; and for the four days, June 12–15, there were 102 inches.

The *Imperial Gazetteer* of India, 2d. Ed., Vol. VIII, p. 179, says :

"The rainfall at Cherra Púnji is enormous. The average during the 25 years ending 1881 is returned at 489 inches ; and 805 inches are said to have fallen in 1861, including 366 inches in the single month of July. At Shillong, where the clouds rolling up from the plains of Bengal have already spent their force on three intervening ridges, the annual rainfall declines to an average of about 88 inches ; and at Jowái, which occupies an intermediate position, the average is 362 inches. The rainy season is confined to the five months from May to November."

A CROSSING OF AUSTRALIA.—*Nature*, of May 11, reports that Mr. Guy Boothby has lately crossed Australia from north to south, starting from Normanton, on the Gulf of Carpentaria, in March, 1892, and arriving at Adelaide about a year after. He travelled on horseback or in a wagon to Bourke, in South Australia, thence in a boat down the Darling and in a river steamer to Morgan, where he took the railway to Adelaide.

The feat is sufficiently rare to be worthy of record.

DISCOVERIES IN THE CHATHAM ISLANDS.—Mr. H. O. Forbes, in an article on The Chatham Islands and their Story (in the *Fortnightly Review* for May), mentions, among other discoveries made by him, the proof that there recently existed in these islands two birds, the nearest allies of which inhabited the Mascarene Islands within the historical period. These birds are a flightless rail allied to the Mauritius *Aphanapteryx*, and a coot which hardly differs from the extinct *Fulica Newtoni*.

The Chatham Islands lie about 400 miles east of New Zealand; the Mascarene Islands (Réunion, Mauritius, etc.) nearly 600 miles east of Madagascar. The groups are separated by more than twenty degrees of latitude and by 120 degrees of longitude; about the distance from London to San Francisco.

Mr. Forbes agrees with Prof. Newton in the belief that there was once a time when Rodriguez, Mauritius, Bourbon, Madagascar and the Seychelles were connected by dry land; and he argues from the existence of the birds discovered that the ancient land comprising New Zealand and its neighboring islands must have been united with the one far to the west-

ward. The connecting body is supposed to have been the Antarctic Continent ; and when the ice age came on the inhabitants must have migrated northwards.

In this way Mr. Forbes explains the appearance of the genus *Aphanapteryx* in regions so far apart as Mauritius and the Chatham Islands.

Mr. Alfred Russel Wallace writes to *Nature*, of May 11, to combat this "tremendous hypothesis" which is, he maintains, inadequate to explain the facts. Small, flightless birds, he says, must have been developed in or near to the islands where they are now found, since they could not have arisen on any extensive land inhabited by carnivorous mammals and reptiles, and could not long survive if introduced into such a country. Allied forms of ancestral flying birds could have reached the islands and there, owing to the total absence of terrestrial enemies and the abundance of food, developed into the allied flightless birds.

This explanation Mr. Wallace holds to be much more satisfactory than that which requires for a basis the supposition of enormous changes in physical geography.

Mr. Forbes replies to these objections in *Nature*, of May 25. He says that Mr. Wallace has himself pointed out that it requires a land connection to explain the presence of the flightless *Notornis* and *Ocydromus* in two groups of islands in the New Zealand region, for it has been hitherto considered an axiom of geographical distribution that the regions inhabited by the same genus or species have been continuous, or have been, at all events, such as to afford possibilities of migration from one to another. If *Aphanapteryx*

could have spread from the Chatham Islands to Mauritius by flight, *Notornis* and *Ocydromus* did not require a land connection to reach the nearer outlying islands from New Zealand, for they may equally have lost the use of their wings after they reached their present homes.

Mr. Forbes affirms that the world-wide distribution of the rails is due, not improbably, to habits which enable them to escape destruction. They live in reed and rush brakes, and the dense vegetation surrounding marshes, amid which pursuit is difficult or impossible. When in the Chatham Islands Mr. Forbes wished to secure a specimen of the *Ortygometra tabuensis*, which inhabits the dense rush-like vegetation of the upland districts of Warekawū. He succeeded only after two days' hard work, with the aid of a dog well trained to pursue this rail. Many birds were started, but they escaped, though none took wing. It is a question, however, whether the gigantic *Notornis* could have escaped under similar conditions.

Persistence in living under persecution depends largely, as Mr. Forbes says, on the numbers in which an animal is reproduced; and he holds to the theory that a land of extensive dimensions existed in the southern seas, in order to explain the distribution of plants and animals, *unknown on the northern side of the equator*, in regions so distant (from each other) as South America, Australia, New Zealand, and Lemuria (the ancient land of which Madagascar, Mauritius, Réunion, Rodriguez, and the Seychelles are the fragments).

THE ROYAL SOCIETY OF NEW SOUTH WALES.—
Original Researches. The Royal Society of New South

Wales offers its Medal and £25 for the best communication (provided it be of sufficient merit) containing the results of original research or observation upon each of the following subjects:—

SERIES XII.—To be sent in not later than 1st May, 1893. No. 40.—Upon the Weapons, Utensils, and Manufactures of the Aborigines of Australia and Tasmania. No. 41.—On the Effect of the Australian Climate upon the Physical Development of the Australian-born Population. No. 42.—On the Injuries occasioned by Insect Pests upon Introduced Trees.

SERIES XIII.—To be sent in not later than 1st May, 1894. No. 43.—On the Timbers of New South Wales, with special reference to their fitness for use in construction, manufactures, and other similar purposes. No. 44.—On the Raised Sea-beaches and Kitchen Middens on the Coast of New South Wales. No. 45.—On the Aboriginal Rock Carvings and Paintings in New South Wales.

SERIES XIV.—To be sent in not later than 1st May, 1895. No. 46.—On the Silver Ore Deposits of New South Wales. No. 47.—On the physiological action of the poison of any Australian Snake, Spider or Tick. No. 48.—On the Chemistry of the Australian Gums and Resins.

The competition is in no way confined to Members of the Society, nor to residents in Australia, but is open to all without any restriction whatever, excepting that a Prize will not be awarded to a Member of the Council for the time being; neither will an award be made for a mere compilation, however meritorious in its way. The communication, to be successful, must be either

wholly or in part the result of original observation or research on the part of the Contributor.

The Society is fully sensible that the money value of the Prize will not repay an investigator for the expenditure of his time and labor, but it is hoped that the honor will be regarded as a sufficient inducement and reward.

The successful papers will be published in the Society's Annual Volume. Fifty reprint copies will be furnished to the Author free of expense.

Competitors are requested to write upon foolscap paper—on one side only. A motto must be used instead of the writer's name, and each paper must be accompanied by a sealed envelope bearing the motto outside, and containing the writer's name and address inside.

All communications to be addressed to the Honorary Secretaries.

F. B. KYNGDON,
T. P. ANDERSON STUART, } *Hon. Secs.*

THE SOCIETY'S HOUSE, 5 Elizabeth Street,
Sydney, 14th December, 1892.

AUSTRALASIAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—This Association has been in existence since 1888, and has held four meetings; at Sydney in 1888, at Melbourne in 1890, at Christchurch in 1891, and at Hobart in 1892.

The next meeting will be at Adelaide, South Australia, September 25, 1893, and will continue for a week.

The Association prints a large proportion of the

papers presented at the meetings, in a volume containing about 600 pages. Each member receives a copy.

There will be excursions to places of interest, and other entertainments; and the time of year fixed for the next meeting is most favorable for a visit to South Australia.

Communications should be addressed to the Hon. Secretaries, The University, Adelaide.

WASHINGTON LETTER.

WASHINGTON, June 15, 1893.

THE SMITHSONIAN INSTITUTION.—Professor Langley in his last annual report stated: "That the Smithsonian Institution is, by reason of its far-reaching connection with the scientific world, enabled to make specially effective use of sums given for immediate employment in specific purposes or investigations," and he felt assured that, were the intentions of the Regents better understood in this regard, the Institution would much more frequently be made the medium for giving effect to the plans of those interested in promoting specific researches, as well as in making permanent endowments.

The total permanent Smithsonian fund is now nearly \$1,000,000.

The Smithsonian Astro-physical observatory is still occupying temporary shelter. The money given to the Institution for the erection of a permanent building is held while awaiting the action of Congress in providing a site. In the report already referred to, the new branch of astronomy known as astro-physics is very concisely set forth. Its purpose is distinctly different from that of finding the places of the stars, or the moon, or the sun. Says Prof. Langley: "The distinct object of astro-physics is, in the case of the sun, for example, not to mark its exact place in the sky, but to find out how it affects the earth and the wants of man on it; how its heat is distributed, and how it in

fact affects not only the seasons and the farmers' crops, but the whole system of living things on the earth, for it has lately been proven that, in a physical sense, it, and almost it alone, literally first creates and then modifies them in almost every possible way. We have, however, arrived at a knowledge that it does so, without yet knowing, in most cases, how it does so, and we are sure of the great importance of this last acquisition, while still largely in ignorance how to obtain it."

The meteorological and physical tables originally prepared by Dr. Guyot, and first published in 1851, have passed through four editions, the last of which was exhausted several years ago. In preparing a fifth edition it was determined to conform the tables to the present state of our knowledge. This has been done with the aid of Prof. William Libbey, Jr., of Princeton, and Mr. G. E. Curtis of the Smithsonian Institution. The work will be hereafter known as the Smithsonian Tables.

Prof. Langley, on behalf of the Smithsonian Institution, has secured for a term of years a table at the famous zoölogical station at Naples for the use of American investigators in marine biology. And, as an advisory committee to aid him in the selection of candidates for the privilege of using the table, he has appointed Dr. J. S. Billings, U. S. A., Prof. E. D. Wilson, of Columbia College, Prof. J. A. Rider, of the University of Pennsylvania, and Dr. C. W. Childs, of the Department of Agriculture.

This Station is the greatest centre of biological research in Europe, and most important for advanced students and investigators. Although the tables as

they are termed, have been in existence for twenty years, this is the first time one has been secured by any American institution. The action of the Smithsonian in thus providing free access to advantages so eagerly sought from all quarters cannot therefore be too highly commended.

HYDROGRAPHIC OFFICE.—Lieutenant Commander Richardson Clover has been relieved of duty as Hydrographer, U. S. Navy Department, and granted several months' leave of absence, at the end of which time he expects to be placed on sea duty.

Commander Charles D. Sigsbee has been designated U. S. Hydrographer. A better selection could not have been made. Aside from the fact that he has twice already been connected with this office (in 1873-74, and again in 1878-82) he rendered while attached to the Coast Survey (1874-78), in charge of the *S. S. Blake*, most important service in developing, if not creating, new methods in deep-sea sounding and dredging. By means of the method he invented and put in operation on board the *Blake*, deep-sea work became nearly as ready of accomplishment as ordinary littoral soundings. A description of his instruments and their application was published in 1880. In consideration of the value of these improved methods and appliances he was awarded a decoration by the Emperor of Germany. Commander Sigsbee has been on sea duty fifteen years, and on land duty sixteen years—most of the latter at the U. S. Naval Academy.

THE FISH COMMISSION's hydrographic survey of the North Pacific region begun by the steamer *Albatross*

under Commander Tanner in 1888 has been completed between the Straits of Juan de Fuca and the Mexican boundary line. By this survey the contour of the continental border has been developed from the shore line into depths of 200 fathoms as far south as Point Concepcion, the region between the latter place and San Diego having been previously explored. A great wealth of hydrographic information of value to navigation has been obtained. A careful series of temperature and density, as well as biological observations in different parts of San Francisco Bay by Mr. C. H. Townsend, the naturalist of the *Albatross*, seems to indicate that the waters of that region are not, as has hitherto been supposed, unsuited to the breeding of Atlantic coast oysters. Dr. Bashford Dean, of Columbia College, N. Y., an expert on the subject of oyster-grounds, has been commissioned to study the methods of oyster-culture now practised in European countries, and to prepare an illustrated series of reports regarding these matters.

MARINE METEOROLOGY.—The effect of barometric pressure on ocean currents is a matter of discussion among meteorologists. Lieut. J. E. Pillsbury's observations in 1886 in the Gulf Stream clearly show the influence of barometric observations. The *June Pilot Chart* displays on two small charts a comprehensive and instructive presentation of the ocean current system of the North Atlantic, and the curves of average equal barometric pressure. While these present no new discoveries, they give new light, and will lead to observations for practical consideration of facts regarding the

barometer, which has not heretofore received the attention that it should, and it is hoped through these practical observations that beneficial results will accrue both to commerce and the science of meteorology. The Hydrographic Office invites careful observations on the extent to which the barometric pressure is a factor in influencing ocean currents. Comparing the blue wind arrows on the main Pilot Chart with the small barometer chart and the small current chart, a striking similarity appears between the curves, showing equal barometer pressure, directions of the winds, and general directions of the ocean currents. Among the causes which operate to produce and influence the winds and currents, this comparison suggests that the varying barometer pressure may be one of the original causes as well as a final influence on the direction of the currents, directly by its varying pressure, as well as indirectly through its relations to the wind. The subject is one of growing importance.

TOPOGRAPHIC SURVEYING.—The present stage of development in methods of topographic surveying is to be generously set forth in a manual, giving descriptions of the topographic work, instruments and methods used by the United States Geological Survey. The work will be accompanied by a collection of constants and tables used in the reduction of astronomical observations for position, of triangulation, of height measurements, and other operations connected with the making of topographic maps. While it is not intended as a general treatise on topographic work, it may to a certain extent supply the existing need of such a work.

Besides the valuable tables already referred to, it will contain an account of former and present surveys by the General Government, by States and by railroad companies.

The guarantee of the work is its author—Mr. Henry Gannett.

YELLOWSTONE PARK.—Mr. Gannett recently entertained the Geographic Society with personal reminiscences of the Yellowstone country at the time when the nearest settlements to the Park were one hundred miles away, and the nearest railroad was five hundred miles ; when the express train was a Concord coach, and the ordinary conveyance was on horse or mule back ; when the white and red man alike were wild, as well as all animal and vegetable life. He noticed the remarkable fact that when the first settlers, only a generation ago, came into Montana, and miners and prospectors flocked in rapidly and spread widely over the mountains in search of the yellow metal, they seem to have almost completely avoided the region now constituting the Yellowstone Park. And the same was the case with the early exploring expeditions. Lewis and Clarke passed to the north ; the Pacific Railroad explorers avoided it, passing to the north and south, while Reynolds, in 1860, travelled all around it, without apparently being able to penetrate it. The reason, he said, was not difficult to discover. The area of the Park is a high, undulating forest-clad plateau, traversed by mountain ranges and groups. It is the highest land north of Colorado, lying at the sources of the Missouri and Snake rivers, and has a very severe

climate. Snow lies on it until summer, and commences to fall again in August. Frosts occur every month in the year. It is always either winter, or late in the fall. On the east it is separated from the rest of the country by a high, almost impassable mountain range, stretching from the head of Wind River to the bend of the Yellowstone, which effectually prevents access from that side.

Mr. Gannett dwelt on the legends and stories about the region, and on the wanderings and experiences of various exploring parties prior to the Government exploration under Dr. Hayden in 1869, which resulted in establishing the Yellowstone National Park by an Act of Congress, in the spring of 1872. He related a curious circumstance as to the location of the southern boundary of the Park. It is described in the act as "the meridian through a point fifteen miles west of the most westerly portion of Madison Lake." At this time the name Madison Lake was applied to what is now known as Shoshone Lake, as it was then supposed that the lake was the head of Madison River. The name Madison Lake is now applied to a little pond at the head of Madison River, which for half the year at least, is dry. A literal interpretation of the statute would place this boundary several miles west of its true position for the six months of the year during which the lake is in existence, while during the other six months, when it is dry, there would be no western boundary at all.

Mr. Gannett was in charge of the party which, in 1878, made the Government map of the Park reservation.

TEXAS.—At a recent meeting of the National Geographic Society, Mr. Robert T. Hill, of the U. S. Geological Survey, presented so strikingly the physical characteristics of Texas that he may be said to have increased our knowledge of the geography of a country that includes within its area about one-twelfth of the entire United States. This area is so great and diversified that it embodies the distinctive features of every part of the country. In length and breadth the state is about equal—750 by 750 miles. Said Mr. Hill, it is a humid state, an arid state, a forest, a prairie, a mountain, and a plains state. It is a southern state a central state, and a western state—everything but a northern state.

The great Atlantic timber belt region extends into and ends in Texas, occupying in the northeast corner an area as large as Virginia. This portion is known as East Texas. In southern Louisiana and Alabama a narrow strip of prairie begins to appear between the timber belt and the sea. This is cut by bayous, whose banks are the home of the magnolia, the cape jessamine, and the palmetto. It has its greatest development along the Texan coast, and it is called the Coast Prairie Region, occupying an area as large as the coast states of New England. The great plains of the Dakotas, Nebraska and Kansas can be followed into Texas, finding there in their southern end a country equal in area to Kansas. If the approach to the region is from the city of Mexico, Santa Fé, Salt Lake City, or any point on the great central basin which lies between the crests of the Cordilleras, known as the Great Basin Region, the truly arid country is found to con-

tinue into Texas with all its characteristic aspects. The crests of the Rocky Mountains can be followed southward from Colorado and New Mexico into Texas, between the Pecos and the Rio Grande. It may be said, therefore, that from a natural standpoint Texas embraces physical features belonging to the Great Atlantic Coastal Plain, to the Coast Prairies of Louisiana, to the Great Plains of the West, to the Rocky Mountain Region, and to the Plateau of Mexico or Great Basin Region.

But while the natural features of Texas are largely the continuation of some of the grander divisions of the United States, the region is also, to a certain extent, physically insulated from them all. Upon the east and northeast are the waters of the Gulf of Mexico, and the malarial swampy regions of the Red and Sabine Rivers. Upon the north is the Indian Territory, with the Ouachita range of mountains extending from east to west. Upon the west are the arid deserts of Eastern New Mexico, perhaps the least populated of any portion of the United States, while the Rio Grande on the south has until recently proven a political barrier as great as though it were an ocean. These physical peculiarities are natural barriers to familiar interstate intercourse.

In the heart of the state and extending across it are the Black and Grand Prairies, a vast body of country which has no counterpart on this continent, and which possesses the most fertile of American soils. The easternmost part (the Black Prairie) constitutes perhaps the largest body of arable land in America, every inch of its 40,000 square miles being capable of culti-

vation. The western part (the Grand Prairie) contains some of the most picturesque landscapes in the country. There is an escarpment making a sudden ascent from the Black to the Grand Prairie region, the altitude changing from 600 to 2000 feet within a few miles. West of the Grand Prairie region lies what is known as the Wichita country, with a wheat growing population producing sufficient cereals for the consumption of the entire population of the state and a surplus for exportation.

Another peculiar region in Texas is the southeastern corner, which, in the light of recent events, might be termed Garza-land. It is a triangular area of low, dry country along the Rio Grande, covered with a dense, prickly, scrubby vegetation, everything that has thorns—mesquite, cactus, and cats-claw—some of which grow to a height not tall enough for timber, and yet sufficiently high to conceal a man on horseback. This country, so well adapted for nomadism and concealment, has been the refuge for all disturbed spirits of both nationalities. It may be termed the birthplace of Mexican revolutions, and the home of border bandits, Mexican and American.

But this same region is the source of the enormous range cattle industry of this country. Some of the great ranches occupy areas of 900 square miles, and for years have supplied stock for all the northward country.

In the northwestern portion of the state is the country known as the Llano Estacado—The Plains. Practically, the region may be described as a vast oblong *mesa*, lying between the Pecos and the Canadian

Rivers, including an area equal to the size of Iowa. The level of the plain at the northwest corner rises to a height of over 1000 feet above the Canadian River. It is a vast area, unmarked by trees or shrubs. Its chief vegetation is the short mesquite or buffalo grass, which grows in great luxuriance, making the lands especially desirable for grazing purposes. Its peculiar feature is the utter absence of streams, but an abundant supply of water can be obtained throughout the plains at depths averaging some 200 feet. Twenty years ago this plain, except the narrow neck between Fort Concho and Fort Davis, was considered a *terra incognita*, which, for want of water, not even the hardiest traveller dared penetrate; but since the construction of the Texas Pacific, and the railroad between Denver and Fort Worth, a large population has poured in, and now one is scarcely out of sight of the tall windmills which are scattered over it from one end to the other. It is a remarkable fact that the negro race has not acquired any foothold in this new part of Texas.

DEATH VALLEY EXPLORATION.—As a further contribution to the literature of the Death Valley expedition of 1891, Dr. C. Hart Merriam has prepared Part 2 of the report on results. It is a biological survey of Southern California, Southern Nevada, and parts of Arizona and Utah. It consists of special reports on birds, reptiles, batrachians, fishes, molluscs, insects, and the desert shrubs, cactuses and yuccas; and is accompanied by a list of localities. The writers of these reports in the order named are Dr. A. K. Fisher,

Stejneger, C. K. Gilbert, Riley, R. E. C. Stearns, Dr. Merriam, and T. S. Palmer. The consensus of opinions of these naturalists is that by means of the collections the science of biology has been materially advanced. Mr. Stejneger says that since the days of the great western expeditions, the Mexican boundary survey, the various Pacific railroad surveys, and Wheeler's survey west of the 100th meridian, no collection of North American reptiles and batrachians has been made equalling or even approaching that brought home by the Death Valley Expedition.

A map of the region traversed by the expedition exhibits an activity that must have tested the endurance of its members severely.

Part 1, comprising the itinerary, description of the region, discussion of life zones, and report on mammals, is not yet ready.

HAWAIIAN ISLANDS.—A well condensed summary of the latest reliable data concerning the Hawaiian Islands has been prepared in the Military Information Division of the Adjutant General's office "for the information of the army."

While the work adds little that is new to our knowledge of the region, the compilation of existing facts has been so skilfully made (by Captain George P. Scriven, Signal Corps, and Lieutenant J. Y. Mason Blunt, Fifth Cavalry) that we have in forty-three quarto pages an admirable and well digested description of the physical features, climate, diseases, etc., of the eight islands constituting the Hawaiian group. The individual characteristics of Oahu, Hawâii, Maui,

Kauai, Molokai, Lanai, Niihau, etc., are described ; each as to its coast, interior, cities, towns, public buildings, manufactures, and publications, with general physical characteristics, soils, climates, earthquakes, etc. As might be expected, civil, political, and financial characteristics are set forth without bias. Methods of inland and foreign communication—roads, railroads, steam vessels, telegraph, telephones, postal service, and distances are described and charted. The strategic value of the islands and their geographic position are graphically indicated. There are also a general chart of the group and separate maps of Oahu, Hawaii, Maui, and Kauai. These islands, with Molokai, contain the bulk of the population as well as the chief industries. The climate is described as warm, but salubrious. In the shade it is never hot and seldom chilly. Major Dutton says there are almost as many climates as there are square leagues, but that relatively to human comfort the climate is perfection—the temperature varying from 55° to 75° in winter, and from 70° to 85° in the summer. Cold and hot “waves” and frost are unknown. About one-half of the population is native and half caste ; the balance is largely Chinese and Japanese, interspersed with Americans, British, Germans, French, Portuguese, Norwegians, and Polynesians. Ninety-one per cent. of the trade is with the United States. All forms of religion are tolerated, but the Protestants and Roman Catholics are largely in the majority. Laws are modelled on those of the United States.

Congress was strenuously urged in 1891 to make provision for cable communication with these islands.

An appropriation for the purpose was lost in the conference (trading) Committee of the two Houses during the last hours of the session. But, simultaneously, provision was made for a series of "soundings to be made between San Francisco and Honolulu for the purpose of determining the practicability of laying a telegraph cable between these two points." The President directed the work to be done by the Navy Department. The steamer *Albatross* began to take deep-sea soundings in October, 1891, and by January, 1892, two lines had been run between Monterey Bay, California, and Honolulu. The *Albatross*, being required for special investigations in Bering Sea, was detached from the work in February, and the steamer *Thetis* was detailed to run a third line between Point Concepcion, California, and Hilo Bay, Hawaii. The work was prosecuted with all the care and accuracy that the means for modern deep-sea research afford. The results, prepared in the Hydrographic office of the Bureau of Navigation, have recently been given out.

The maps and observations present a good knowledge of the route, and establish the fact that the laying of the cable on almost any line between California and the Hawaiian Islands is practicable. A lane about 200 miles wide was developed, and the results seem to indicate the most favorable route to be a rhumb line between Monterey Bay and Honolulu. This line will require the smallest length of wire, and will pass over an even bottom favorable for the protection and preservation of the cable, avoiding submarine mountains. "The plan of the survey consisted in developing the bottom of the ocean by observations of the depth, the

character of the bottom soil, the temperature at the surface and bottom of the ocean, and the vertical distribution of temperature throughout the whole depth." The length of miles sounded was 6,785 miles. The distance steamed was 10,769 miles. The number of soundings was 874, taken at alternate intervals of ten and two miles along the great circle.

The magnificent physical hydrography developed in this interesting scientific investigation is the remarkable feature of the survey.

Within a very short distance from Salinas Landing a sudden depression of nearly 2000 feet in the ocean's bed is gradually increased to about 9000 feet at not more than fifteen miles from the coast. From this point the shelving continues on a more gradual scale until a comparatively level bottom is found at a depth of about 18,000 feet; and this great depth is continued to within a short distance of the Hawaiian Islands. At a distance of 570 miles from Monterey a mountain rises two miles and a half, or to within about 3000 feet of the surface of the ocean. A condition very similar was found 200 miles east of Honolulu. In both cases the water deepens quickly from the slopes, and the cable route, somewhat diverged, passes at the foot of the mountains.

Large colored charts represent profile views of the Pacific along a great circle of the earth between Salinas Landing and Honolulu; between Concepcion Point and Hilo Bay; and along a rhumb line between Salinas Landing and Honolulu. Also, a chart seven feet long represents in shades of blue and contour lines the bottom of the Pacific between California and the Hawaiian Islands.

The work of the Government will probably end with the survey. Private enterprise must construct and lay the cable. The plan and the best route have been mapped out. Whether a line merely connecting California with Honolulu would have enough business to make it immediately profitable is very doubtful. If extended to Japan or Australia the conditions would be vastly improved. But in view of the immense strategic importance of these islands, and the possible opening of the Nicaragua route, it is not likely that the great consummation will be long delayed.

ARGENTINE REPUBLIC.—A résumé of the condition of affairs in the Argentine Republic to the end of 1892 presents many gratifying aspects, in spite of the disastrous effects of the financial storm of 1890.

A new government came into power in October last, and since that time there has been an implied assurance that at least the peace of the country is safe. The national territories are all now organized under territorial government, and are generally in prosperous condition. The movement of progress has reached the mysterious regions of Tierra del Fuego, and it is said that the town of Usuaia, on the southern coast of that desolate country, is surrounded by pleasant gardens, while the Indians "converse in the English language, and have put on the garb of civilization."

Railway construction has been advanced to a moderate extent. The railroad in which the whole world is interested—that projected across the Andes to connect the Atlantic and Pacific—has been finished as far as Rio Blanco, leaving a gap of about 20 miles to the

Chilian boundary. On the Chilian side rails now extend for 20 miles, but much work has been done beyond that point, and the materials for the whole line are on the ground. The tunnel drilling should be completed with the plant now ready in about three years. Work is progressing from twenty-two different headings at the same time, and it is expected that when the rails have reached the foot of the pass from both sides a large passenger and cattle traffic will be carried on. The journey from Buenos Aires to Valparaíso by sea takes about twelve days and costs about \$200. By the railway it will take two days, at a cost of less than \$60. The Royal Mail Steamship Company is booking passengers through to Valparaíso, transporting passengers and luggage during the summer months (November to March) across the Andes.

The very large reduction in 1891 in the import of lumber, hardware, railway materials and combustibles (about \$30,000,000) shows how seriously the progress of the country has been retarded by the misfortunes of the government. The trade with Great Britain fell back \$32,000,000, and the commerce with the United States to the figures of twenty years ago. The figures for 1892 show some improvement.

CHINESE IMMIGRATION.—In Brazil the farmers are unable to procure sufficient help to carry on their business, and the best mode of introducing Chinese and Japanese laborers is the question now being discussed by the planters and speculators. It appears that the management of immigration is intrusted to companies, and one of these companies, at least, having fears that the Chinese will refuse to immigrate to this Republic

(!), has sent an agent to China to investigate the situation, and at present all eyes are turned to China. It is said that nothing will be left undone to make large additions of Chinese to the present population.

The Chinese land telegraph line has been joined to the Russian system. Messages can now be sent to any part of the world from any telegraph station in China. The only province not reached by telegraph is Yunnan, which still remains opposed to all foreign innovations.

PRIMITIVE SHIPS.—Mr. George H. Boehmer, long connected with the Smithsonian Institution, has published a study of prehistoric naval architecture in the north of Europe. His investigations and discoveries are mainly on the line of vessels which have been disclosed in excavations on the coasts of European countries. These boats have been discovered in many places.

The tribes inhabiting the British Islands at the time of the Roman invasion had, as might be expected from their proximity to water on every side, employed a species of boats—dugouts, capable of holding thirty or forty men. The contact of the invasion wrought improvement in these rude types.

Their Scandinavian neighbors were further advanced in the art of ship building, and instead of the primitive dugout, constructed built-up ships propelled by oars, so arranged as to be used in either direction without unshipping. Their prows were very high. Mr. Boehmer thinks that a navy of such ships must have been the growth of centuries before the Christian era. He claims that the numerous similarities between the ships

of ancient Greece and Rome and the remains of pre-historic ship-building in the north of Europe suggest a common origin, and he describes the more important points of similarity and dissimilarity. This ground is denied by many investigators, but Mr. Boehmer argues that the naval structures of Scandinavia indicate that the maritime explorations of the Phœnicians had a tendency to influence the ancient inhabitants of the north in the construction of their vessels. That the art taught the Phœnicians by the Egyptians may be traced to the Greeks, whose naval structures show a remarkable resemblance to those a thousand years older, and are produced in the Roman ships. There are contemporaneous accounts of the naval structures of these two nations, and the subject has been largely investigated and written upon during the last three and a half centuries, as shown by Dr. Emil Luebeck's bibliography in his *Seewesen der Griechen und Römer*.

Mr. Boehmer describes at length the dugout and ribbed boats and the evolutions of naval architecture of the Germanic people, the Saxons and the Scandinavians, citing authorities and illustrations very copiously.

To the custom of ship burial which was practised by the Scandinavians we owe most of the valued restorations of ancient naval structures. In accordance with this custom, the bodies of the prominent dead were taken to the ship that had been their home during life, and this, surrounded by their wealth, became their last resting-place. Two methods of burial existed ; that of cremating the ship, together with its sepulchred inhabitants, and one in which a mound was erected over the ship and the dead. It is to the latter method that we

are indebted for some well preserved ships which extend our knowledge of prehistoric ship-building. Several notable excavations of ships buried for centuries have been made within a very recent period. These and others less known are minutely described and illustrated in Mr. Boehmer's admirable work.

From some boats exhumed in the duchy of Schleswig, which were of the type in use from 30 B.C. to 224 A.D., the use of the word starboard as applied to the right side of a ship is traced. These boats were propelled by oars and steered by means of an oar tied to a cushion of wood, fastened to the right side of the vessel. It was then called the "stearboard," and the evolution to the present term is simple.

Mr. Boehmer's work evinces great learning and much industry. It must be regarded as an important addition to the literature of prehistoric times.

H.

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THE GEOGRAPHY AND ARCHITECTURAL
MONUMENTS OF MEDIEVAL EUROPE.

BY

GEN. EGBERT L. VIELE, *Vice-President*, AMERICAN GEOGRAPHICAL
SOCIETY.

The traveller in Europe sees everywhere the architectural remnants of by-gone periods of time. On the banks of the rivers, in the valleys, on the hill tops and mountain sides, in the hamlets and in the midst of cities, these time-stained, ivy-covered remains present themselves; some are simply a mass of ruins, some are in partial repair, while many have been carefully preserved or restored. There are castles and abbeys, fortresses and monasteries, chateaux and cathedrals, and many humbler places of worship. Besides these there are walled cities, surrounded by deep moats and arched gateways, flanked by huge towers, all telling of a tumultuous past, strangely associated with much religious enthusiasm. Everywhere one meets also throngs of visitors wandering through these relics of dead centuries, to many of whom they are merely food for curi-

osity ; but to the thoughtful and studious they possess a deeper interest, while to the statesman and philosopher they are object lessons of grave import. Each has a history of its own—of tragedy, comedy, or romance, and all have had more or less influence in shaping the events with which they were contemporaneous. For the most part they were erected during that indefinite period of time which the writers of history have designated as the Middle Ages, extending, according to some, from the fifth to the tenth century ; according to others, from the fifth to the fifteenth century, or from the fall of the Roman Empire to the Protestant Reformation, a period of about ten centuries. It is impossible, however, to assign closely defined limits to great social revolutions ; they have their origin in occurrences long antecedent to their actual development, and their results extend far beyond their apparent termination. More particularly is this the case with the Medieval era. The field of its activity was limited in extent, in comparison with the momentous events of which it was the theatre. Reaching from the Mediterranean to the Northern seas, and from the Bay of Biscay to the Black Sea, it had on the north a vast area of uninviting forest, and to the south a broad expanse of cheerless desert ; yet from that forest and from that desert came the overwhelming hordes of barbarism that crushed out the dawning civilization of the world, and for long centuries held in check every effort of man towards a higher plane of existence. There was an utter destruction of all forms of law and order, a breaking down of all the barriers erected for the protection of life and property, ending in the com-

plete annihilation of empires and kingdoms whose people had attained a degree of refinement and culture until then unknown, leaving nothing in their place but a waste of irretrievable ruin and desolation, the abode of ignorance and superstition; and yet within a period of a thousand years there emerged from out of this chaos the present nations of Europe. Just how this marvellous hiatus in the progress of humanity commenced, continued and ended forms a most interesting chapter, not only of political history, but of physical geography. The forces that were called into play were gigantic in their character, conflicting in their operations and stupendous in their results. These forces were the threads from which was woven, by the hand of time, the vast and complicated fabric of European civilization; their variegated colors form the tapestry of history. Underlying all and dominating all are the geographical conditions that determine the foundation and limit the duration of nations.

The true character of the medieval period is found in a comprehensive answer to these three questions: Whence came the early civilization of Europe? Whence came its destruction? Whence came its revival?

This great globe of ours, on which cartographers have delineated five zones of temperature, has other zones not so sharply defined, but more absolute in their character and more potential in their influence. One of these is the zone of greatest production, towards which the human race gravitates of necessity, for beyond it life is a long and arduous struggle for a mere existence, without progress and without development. History tells us that this is also the zone of civilization,

along which the path of empire has moved around the world. Within this zone lies the heart of Europe where the medieval drama was enacted. For long centuries this was an unknown land to the people of the East. The banks of the Euphrates, the Indus and the Nile teemed with the busy life of cities and towns, the opulent centres of oriental magnificence. Nineveh and Babylon, Thebes and Luxor had risen to their zenith and fallen into decay, while yet the whole of central Europe was a vast primeval forest, the abode of wild beasts and roving bands of savages. As a knowledge of geography and navigation developed among the Eastern people, and the Mediterranean became a channel of commercial intercourse between the continents, the shores of this great inland sea and the peninsulas extending into it began to be peopled and a new era dawned upon the world. The spell of orientalism was broken! This offspring of superstition and slave of sensuality until then had held under its baneful influence all there was of civilization,

“ While wrapped in sleep earth's torpid millions lay,
Hugged their vile chains, and dreamed their age away.”

Orientalism was to lose its sway. The Occident and not the Orient was henceforth to dominate in the affairs of men. On the continent of Europe was to be opened a nobler field for human progress.

The colonization of the shores of the Mediterranean gave birth to a new race through whose active energies a higher plane of physical, mental and spiritual development was to be reached. How grand! how magnificent! how heroic was that development! how marvellous the story, so familiar to all and yet of never-ending interest!

The chief element in the civilization that centred in Greece and Italy and culminated in the erection and expansion of the Roman empire until it extended over the greater part of Europe, northern Africa, eastern Asia and the islands of the sea, was the geographical conditions that characterized these two peninsulas, without which, in all probability, there would be much less of their history worthy of record. Their peninsulated position contributed in a large measure to that defence against outward foes so essential to their early development, while their internal geography moulded their national character and shaped their destiny.

The most obvious peculiarity of the geography of Greece is its remarkable richness in mountains, bays and islands, which give it unexampled national defences, unusual maritime advantages and a peculiar variety of climate, vegetation and scenery. In this respect it but gathers into a smaller page, and expresses in a distincter type, the structural peculiarities of the continent to which it belongs. In the complexity of its make and the variety of its natural features, Greece excels every country of Europe, as Europe excels every continent of the world. Greece, like Europe, is divided by its mountain chains into a number of independent parts. The basins of arable land between the hills maintained comparatively isolated populations on account of the difficulty of inland communication, and naturally developed that individuality of character, that local patriotism and that political independence which marked the Greek communities; and the great variety of pursuits, interests and stimulus which the geographical features of the country created could not

fail to conduce to the uncommon vigor, quickness and versatility which the people exhibited. The Greeks owed their greatness largely to the physical geography of the country it was their good fortune to inhabit. We have here, at a glance, the source of that Hellenic development which exerted such a powerful influence over succeeding ages. What there was of civilization in Rome was due to Hellenic influences. Greece, the centre of the highest form of outward culture that the world has ever known, shed the glory of her genius over the nascent civilization of Italy, and gave to it all that it possessed beyond the barbaric force that enabled it to overrun with its armies the continent and the islands of the sea. Greece, where the beautiful and sublime in art combined with the highest skill, was enabled not only to Hellenize Rome, but even in her ruins to Hellenize the civilized world of to-day. Two thousand years of effort have left only imitations of her genius. It was this culture, this refinement, that was to be brought face to face with the barbaric hordes of the north. Rome in her conquests had absorbed the once glorious republic, but had not destroyed her intellectual influence. Rome had undertaken to beat back the invaders, and for long years her legions had checked the advancing tide, but the surging waves rolled on. Time after time they were cowed into subjection under the influence of wonderful strategic skill. Forty thousand miles of military roads penetrated every portion of the continent, reaching even into Asia; to facilitate the movement of the armies and connect the military posts and colonies, an unrivalled organization and system of administration was everywhere established. The

Roman people and the Roman armies were stimulated to the highest degree of patriotism and courage. Rome itself became a magnificent city of palaces; along her marble porticos victorious leaders rode in ivory chariots at the head of triumphal processions, followed by their captives in chains, amid the exulting shouts of the multitude. Adventurers from every clime flocked to her standard; the whole empire became a vast recruiting depot—but all in vain.

During the centuries of Greek and Roman development the population of the earth had immensely increased; space and food were required to sustain this increasing human life; the heart of Europe afforded the only refuge for the starving masses of the north and east. For æons of ages the preparation for this epoch in the life of the world had been going on. The gigantic forces of nature had been at work completing the geography of the continent. The climatic influences, largely due to the Gulf Stream, by which the chilling blasts of the north and the burning winds of the south were alike tempered in their intensity, had prepared the way in that fertile soil and luxuriant vegetation that were to afford the sustenance demanded by the teeming millions. The avalanche and the glacier had been doing their work grinding down the Alps and the Jura, while the great Rhine river spread the debris over the bed of the Northern Sea until it rose above the waters, to create a home for powerful and opulent nations that were to be. It was nature's fiat that the supremacy of the world should pass from Rome—hunger was stronger than her walls, and greed more powerful than her armies. Rome fell! but not in a day,

or a year, or a century. Her fall was as much the result of centuries of disaster as her rise had been that of centuries of progress. Her growth was due to ever-changing and unforeseen conditions. A purely military government, its wealth was the spoils of conquest and not the fruits of industry or thrift. The barbarians learned its weakness while being taught its strength. In time barbarian soldiers filled the ranks of its legions—barbarian commanders led its armies, and barbarian emperors sat upon its throne. Its grandeur and its splendor became the cloak for the lowest forms of vice and crime, and thus the transition was gradual from glory to shame. The extremes of barbarism and civilization met, as they always will meet to the end of time.

And now for a thousand years the most conflicting elements were to struggle for the mastery amid the ruins of an extinct dynasty. Anarchy reigned supreme. There was no law but the law of force ; none to administer justice, none to protect the weak against the strong. There was, however, one element that survived the wreck of empire—it was the Christian Church. Persecuted and despised for centuries, it had never abandoned its faith, but continued to fight out the battle against paganism, only to find itself arrayed against Islamism. When the Emperor Constantine abandoned paganism and adopted Christianity, he assumed the unqualified and absolute protection of the Church. Persecution ceased, and Christianity, rising from the cross to the throne, became an integral part of the imperial system. The priestly functions assumed an air of princely grandeur, gorgeous robes and elaborate ceremonies were added to the religious exercises, and

the head of the Church became a power in the State. By imperial decree, vast territories were added to its possessions everywhere, involving a system of secular administration on a large scale, and adding greatly to its revenues and power, while creating a condition of dependencies and vassalage second only to the empire itself. It was under these circumstances and in the absence of any other semblance of authority that the Roman Pontiff grasped the sceptre that had fallen from the hand of Caesar, and proclaimed the secular supremacy of the Church. An empire of peace was offered to replace the empire of war. Persuasion was to take the place of force. Every effort was made to Christianize the idolatrous hordes, and draw them within the pale of the Church, with but little success. The savage bands had come to the feast of the vultures. The ghouls of barbarism were fattening on the carcase of the dead empire; with them moral force had no more potency than a wisp of straw—without fear and without reverence—anathemas did not terrify nor blessings tempt them. Tribal chieftains assumed the dignity of feudal lords; each, gathering his clans, seized upon as much land as he could defend, erected his castle, and bid defiance to all comers. In time the whole Continent was dotted with these strongholds of feudalism, and feudalism became the dominant power. In this extremity the Pope found a powerful ally in Charlemagne—the grandson of that Charles Martel, who had at the battle of Tours checked the further progress of the victorious hordes of Islamism, that would have subjugated not only France but Europe. Charlemagne sustained the Pope in his assumption of temporal

authority, and at Rome was by him crowned Emperor of the "Holy Roman Empire." But on the death of Charlemagne the old order of things returned—the feudal chiefs became feudal barons and their castles multiplied. They studded the banks of the Rhine and exacted tolls from its commerce—the strong made forays on the weak—slavery in the form of serfdom was universal, and the whole Continent was a scene of rapine and plunder—neither life nor property was safe.

In the midst of all this there arose another power which was destined to wield a commanding influence—this was the civic power, or the municipalities. Commerce drew the merchants and the artisans to the cities, which, increasing in number and in wealth, became an important factor in the life of the period. Amid the general disorder they were necessarily on the defensive, hence all the cities were fortified, and to this day the type of a European city is a vast fortress. Here there were three antagonistic forces, each striving for the supremacy—the Church, the cities, and the feudal lords, and for a long period these three conflicting elements of society stood at bay. Each of these is largely represented in the architectural monuments that remain as evidences of their power and importance; the cathedrals, the civic halls, and halls of the guilds or trades, and the feudal castles. A grand impulse was given to cathedral architecture in consequence of the wide-spread excitement and terror produced as the end of a thousand years from the birth of Christ approached. The belief was almost universal that at that date the end of the world would take place, and when it had

passed such was the joy and exultation that vast sums were lavished on temples of religion, as tributes of gratitude and thanksgiving for the lives that were prolonged. The castle was the domiciliary exponent of social and domestic life in the middle ages, just as the log cabin and stockade were the exponent of the social life of the pioneer in the early settlement of America. Universal rapine and turbulence made it necessary that the castle should be a fortress, just as the stockade was a necessity for the protection of the pioneer from the Indians. In his castle, the feudal proprietor led a semi-regal life ; his vassals and retainers formed in time of need an armed force ; its members proportioned to the means of support possessed by the feudal lord, and in the same proportion was the size of the castle. As a rule this was constructed in accordance with certain established principles of attack and defence, and all the castles had these principles more or less developed in their construction. The walls as a rule were very thick and composed of either quarried stone or concrete, whichever was most convenient, and sometimes of both. There was always a moat surrounding the outer wall, either wet or dry. The plan of the castle included two or more courts within the enclosure ; the outer court for the retainers, the inner for the family and guests. In the outer court were the barracks, the armory, the stables, the guard rooms. On the outer wall was a walk for the sentinel. The entrance was defended by a barbican or outwork, with loop holes for musketry. The moat was crossed by a drawbridge, to which were attached chains and weights to raise or lower it. When raised it formed the closed door of the entrance ; be-

hind it was suspended the portcullis, a massive structure of timber and iron to be lowered as a defence of the sally-port or entrance. In the inner court were the banquet hall, the chapel, and the living rooms. The donjon or keep was a strongly built structure for final retreat if the outworks were captured ; the wall of the keep was very massive. Within this were the prison cells. Frequently there were walled enclosures attached for gardens and tournament grounds. Wild and lawless as were for the most part the lives of the men, there was to be found within the castle a certain degree of refinement, and as social order advanced, the influence of the women began to be felt, but it was not until after the Crusades that the full force of this influence developed itself.

The Crusades were in many ways the salvation of Europe. Their original object is lost sight of in the effect they had upon the social order of the Continent. Their origin, their long persistence through a period of 200 years, the barren results obtained compared with the enormous cost and immense sacrifice of life, the extraordinary moral contagion that induced so many hundred thousand men to sacrifice their lives, the amazing credulity and blind faith that constituted their chief stimulus, form perhaps the most extraordinary chapter in human history. Their effects, so different from their objects, were felt for centuries. Their influence in the social and political condition of Europe made possible a revolution that no other force could have accomplished.

Starting with the preachings of Peter the Hermit, a ragged mendicant on a donkey, who had witnessed the

cruelties practised by the infidels on the Christian pilgrims to Jerusalem, they aroused the deepest interest of the Popes, and created an enthusiasm bordering on insanity. The rescue of the Holy Sepulchre from the Saracens was the universal and absorbing thought of all Christendom. First the dregs of the population, without arms, provisions, or organization, started across the continent by hundreds of thousands, only to die by the wayside or to perish by the hands of the Hungarians. Then came armies, commanded by kings and emperors and princes and lesser potentates. When all else seemed to fail, fifty thousand children, boys and girls, were hurried to the scene in the wild hope that God would through their innocence accomplish what sinful men could not. All died or were sold into slavery by the Saracens. Horrible as is the recital of folly, misery and suffering, a great good was to come out of it. First, it destroyed the power of feudalism through the impoverishment of so many feudal lords who gave up all for the cause, and the enrichment of a few who were wise enough to stay at home and acquire vast territories and wealth. Some of the feudal chieftains becoming thus more powerful than their fellows, assumed kingly prerogatives, and gradually the monarchical expedient of government was accepted as a relief from general disorder. It was accepted by the ecclesiastics, because their authority in spiritual matters was recognized and their vast possessions protected. It was accepted by the municipalities, because their independent status was conceded and their privileges were not disturbed. It was accepted by the lower orders, because there was for them no alternative, and thus, in course of

time, the people of Europe passed under the control of hereditary monarchies, whose history for the subsequent centuries, with rare exceptions, is but a sad story of wrong and outrage, of bloody wars and revolutions, of internecine strife — of profligacy and imbecility — on the part of rulers, and a universal suppression of individuality among the masses. This so called monarchical principle of government of man, although a mere expedient, sustained by arms and tolerated through fear, was the one ray of sunlight in the mediæval darkness, and through it social order was in a measure secured. The people gathered around the thrones that were set up, and the land by slow degrees was partitioned off into Kingdoms, with their boundaries defined by natural features, mountain ranges or large rivers. In short Europe became a nursery of nations, for which the continent is so well fitted by its geographical conditions.

In addition to this, through the Crusades the diverse people of the two continents, as well as those of Europe itself, were brought face to face with each other, to the advantage of all. Commerce was stimulated, knowledge was diffused. In fact, like our Civil War, the Crusades were a blessing in disguise, the results of which will be felt for unmarked ages.

Out of the Crusades came also the institution of Chivalry, an element of strength and power that exercised for several centuries a commanding influence in the social, political and religious world. Knighthood had its origin among the invading German tribes, being the offspring of that stoicism or indifference to every form of physical pain and suffering, which has always

elicited the admiration and respect of man in his primitive condition. It has been the supreme test applied to the candidate for chieftainship among our North American Indians. By degrees this became an important element in the feudal system, and those who showed themselves most qualified by endurance of hardship, after severe tests, were enrolled as Knights or mounted attendants on their lords. Subsequently the conferring of Knighthood was attended with religious ceremonies, and the qualifications became more and more exacting until the twenty-six articles that the Knight subscribed to seemed to include every possible virtue and exclude every possible vice. Certain it is that a noble order of manhood was established, the influence of which has been indelibly stamped upon civilization everywhere.

The revival of civilization and the intelligent reconstruction of social order, was in a large measure the preservation of the intellectual forces under the auspices and through the masterly organization of the Christian Church, which survived all the changes and mutations of that turbulent period with a vitality almost unimpaired. The monks in their monasteries preserved and fostered the records and the intellectuality of the past, and in their gardens preserved and fostered the seeds and plants that would otherwise have vanished from the face of the earth, and thus it would appear that the imperial protection of Christianity had in it a marvelous foresight; that it was to be the agency for perpetuating that knowledge which would otherwise have passed into oblivion. The world will never know the full extent of its obligation to those religious devotees who have transmitted to futurity the knowledge of a

thousand truths in science and nature, the blessings of which we now enjoy. The crumbling ruins of abbeys and monasteries are the mute evidences of the years of their fidelity, zeal and patient industry. All differences in creed are lost sight of in the contemplation of the great good that has thus come to mankind.

It is not intended to assume, however, that the entire intellectual force of the Middle Ages was confined to those in holy orders. On the contrary, the literature of that period is filled with examples of the highest order of genius, entirely outside the pale of the Church, showing brighter from the contrast with the surrounding gloom. The crowning of Petrarch with the laurel wreath amid the ruins of Rome is a striking evidence of this. "Nothing (says Macaulay) can be conceived more affecting or noble than that ceremony; the superb palaces and porticos by which had rolled the ivory chariots of Marius and Cæsar had long mouldered into dust. The laurelled fasces, the golden eagles, the shouting legions, the captives, and the pictured cities were indeed wanting to his victorious procession. The sceptre had passed away from Rome, but she still retained the mightier influence of an intellectual empire, and was now to confer the reward of an intellectual triumph. To the man who had extended the dominion of her ancient language, who had erected the trophies of philosophy and imagination in the haunts of ignorance and ferocity, whose captives were the hearts of admiring nations enchained by the influence of his song, whose spoils were the treasures of ancient genius, rescued from obscurity and decay, the Eternal City offered the just and glorious tribute of her

gratitude, amid the ruined monuments of ancient and the infant erections of modern Art; he who had restored the broken link between the two ages of human civilization was crowned with the wreath which he had deserved from the moderns who owed to him their refinement, from the ancients who owed to him their fame. Never was coronation so august witnessed by Westminster or Rheims."

The troubadours and minnesingers were the outcome of feudalism, and formed prominent features of feudal life. The isolation of the castles was peculiarly adapted to foster the existence of those roving singers, who either singly or in parties went from castle to castle to entertain the dwellers with their improvised songs and music.

The rise of the monarchical principle, while it broke the power of the feudal lords and so tamed their predatory habits, did not destroy the system—it improved it—and under the new order of things, castle life developed many refining influences. The position of women was improved and their habits and manner of life took on a new coloring. One of the chief characteristics of knighthood was a manly devotion to woman, and the improvised strains of the troubadours largely partook of the tender sentiment. It was an age of romance; in fact the word originated in the tales that were told in the mixed language of the barbarians and the Latins.

In the heart of Germany there is one old town that above all others bears the stamp of the better side of the Middle Ages, and of its later life; it is a spot dear to the antiquarian, and hallowed by gentle reminis-

cences of the poets and painters of that period. Its quaint old houses have a charm that is found nowhere else—a medieval atmosphere still hovers over its gabled roofs—medieval echoes seem to follow the footsteps in its narrow streets, and medieval shadows linger on its walls. Would that time and progress might turn aside and leave old Nuremberg forever undisturbed! How lovingly Longfellow responds to the witchery of its influence:

NUREMBERG.

In the valley of the Pegnitz, where across broad meadow lands
Rise the blue Franconian mountains, Nuremberg, the ancient, stands;
Quaint old town of toil and traffic, quaint old town of art and song,
Memories haunt thy pointed gables, like the rooks that round them throng.

Memories of the Middle Ages, when the Emperors, rough and bold,
Had their dwelling in thy castle, time defying, centuries old;
And thy brave and thrifty burghers boasted in their uncouth rhyme,
That their great imperial city stretched its hand through every clime.

In the court-yard of the castle, bound with many an iron band,
Waves the mighty linden planted by Queen Cunigunde's hand.
On the square the oriel window, where in old heroic days,
Sat the poet Melchior singing Kaiser Maximilian's praise.

Everywhere I see around me rise the wondrous world of art—
Fountains wrought with richest sculpture standing in the common mart,
And above cathedral doorways saints and bishops carved in stone,
By a former age commissioned as apostles to our own.

In the church of sainted Sebald sleeps enshrined his holy dust,
And in bronze the twelve apostles guard from age to age their trust;
In the church of sainted Lawrence stands a pix of sculpture rare,
Like the foamy sheaf of fountains, rising through the painted air.

Here, when art was still religion, with a simple, reverent heart,
Lived and labored Albrecht Dürer, the evangelist of art;
Hence in silence and in sorrow, toiling still with busy hand,
Like an emigrant he wandered, seeking for the Better Land.

EMIGRAVIT is the inscription on the tomb-stone where he lies;
Dead he is not—but departed—for the artist never dies.
Fairer seems the ancient city, and the sunshine seems more fair,
That he once has trod its pavement, that he once has breathed its air!

Through these streets so broad and stately, these obscure and dismal lanes,
Walked of yore the master singers, chanting rude poetic strains.
From remote and sunless suburbs, came they to the friendly guild,
Building nests in Fame's great temple, as in spouts the swallows build.

As the weaver plied the shuttle, wove he too the mystic rhyme,
And the smith his iron measures hammered to the anvil's chime;
Thanking God, whose boundless wisdom makes the flowers of poesy bloom
In the forge's dust and cinders, in the tissues of the loom.

Here Hans Sachs, the cobbler-poet, laureate of the gentle craft,
Wisest of the twelve wise masters, in huge folios sang and laughed;
But his house is now an ale-house, with a nicely sanded floor,
And a garland in the window, and his face above the door;

Painted by some humble artist, as in Adam Puschman's song,
As the old man, gray and dove-like, with his great beard white and long;
And at night the swart mechanic comes to drown his cark and care,
Quaffing ale from pewter tankards, in the master's antique chair.

Vanished is the ancient splendor, and before my dreamy eye
Wave these mingling shapes and figures, like a faded tapestry;
Not thy councils, not thy kaisers win for thee the world's regard,
But thy painter Albrecht Dürer and Hans Sachs, thy cobbler bard.

Thus, O Nuremberg, a wanderer from a region far away,
As he paced thy streets and court-yards, sang in thought his careless lay;
Gathering from the pavement's crevice, as a floweret of the soil,
The nobility of labor, the long pedigree of toil.

LIFE IN THE WILDS OF CENTRAL AFRICA.

BY

E. J. GLAVE.

Upon Stanley's return to Europe, after his memorable journey "Through the Dark Continent" in 1877, several influential and philanthropic gentlemen, recognizing the mutual benefit that would accrue from the opening up, by civilization, of the heart of Africa, formed themselves into a society entitled L'Association Internationale Africaine of which King Leopold II. was the president.

Stanley, having taken a few month's rest to recuperate his health, so enfeebled by illness and hardships during his travels, returned to the Congo River in command of a big expedition under the auspices of the new society, and he was engaged in founding along the course of the river a line of garrison stations, which should form the nucleus of a government destined, ultimately, to rule these vast territories so aptly described as the Dark Continent, and to hold in check the westerly advance of the Arab slave hunter.

In 1885, at the Berlin Conference, the powers of Europe and America recognized the government, established over the Congo basin by Stanley, as the Congo Free State. This new state was duly empowered to employ all civilized means for the institution of law and order in its territory.

In 1883 I became an officer of this association under

curious circumstances. Fascinated by the prospect of the stirring adventure and the novel experience of life in that mysterious land, I applied for a foreign appointment in the service of the Society. A few days after posting my long, imploring letter, I received a courteous reply, informing me that their expedition was already fully manned, and moreover, at any time, they needed only experienced men. At that time I was but nineteen years of age and certainly was not qualified to style myself an experienced man. But the fact of the Society deigning to reply at all gave me strong hopes, and I continued to bombard those gentlemen with my lengthy communications till one Saturday I received a cablegram, instructing me to leave Liverpool on the following Tuesday morning, proceed to Africa, and join Stanley on the banks of the Congo River.

I really believe that they gave me the appointment rather than submit to the incessant worry of receiving and answering my pestering letters.

Since that time I have lived for 6 years in the wild regions of Congoland, and for the greater part of that time the natives were my only companions, which afforded me an unusual opportunity to study their social condition; and I will employ the occasion, granted me by the American Geographical Society, in narrating facts, adventure, and anecdote tending to convey an idea of life in Central Africa, and I will endeavor to portray some of the eccentricities and peculiar characteristics of the villagers.

The Congo River is navigable from its mouth a little over a hundred miles, then a succession of wild waters and rapids, extending almost continuously from Vivi

to Stanley Pool, renders an overland march of 250 miles necessary before the navigable waters of the Upper Congo are reached. The only means of transport over this distance is by manual labor ; all merchandise provisions and boats in sections or plates have to be carried or dragged overland by men. The peaceful, industrious tribes of Ba-Congo are engaged for this purpose, and they receive in payment for their services cotton stuff, brass wire and beads. Though these people are lean, slender-shanked individuals, they possess a wonderful power of endurance. They will travel 25 miles a day, tramping up and down steep high hills, and through the sweltering heat of the stifling valleys, carrying loads weighing 65 lbs weight, and in spite of their arduous duties their nourishment consists only of a few handfuls of peanuts, a banana or two, and occasionally a few inches of dried snake or a smoked field-mouse. At points along the trail markets are held ; the natives of the surrounding country meet under the shelter of spreading trees and exchange the produce of their several localities. At such places the white traveller and his carriers are able to obtain provisions for their journey.

At these gatherings, honesty and peaceful behavior are sternly enforced; the man who draws a knife in anger is killed ; he is stoned to death and his body thrown into a shallow pit dug in the corner of the market place, and in the mound over the grave an old flint-lock musket is driven down barrel foremost until only the stock shows above ground as a headstone warning all to respect tribal law.

On our way to the interior we passed several skele-

tons lashed to the tops of tall poles erected near the highways, and we learned that these were the ghastly relics of criminals punished thus for theft.

To men newly arrived from civilization, the village burial-place presented a curious aspect, for the final resting-place of a Lower Congo chieftain is marked by a grotesque display. All the cheap crockery which deceased had been able to collect during his lifetime is strewn in an oblong path on the grave and surrounded by a suggestive little margin of gin bottles. Each article is broken in some way so that there is no inducement for any one to despoil the sacred memorial.

By the month of July, 1883, I had ascended the Congo River from its mouth a hundred miles in a boat, marched overland through the cataract regions and reached Stanley Pool at the commencement of the navigable waters of the Upper Congo, and I had reported myself to my chief, Stanley, who was living in a grass-thatched clay house at Leopoldville, the headquarters of the expedition. At that time the settlement was in its infancy; to-day it is the most important place in Central Africa. It is the active centre of the Congo Free State, and is the commencement of navigation on the Upper Congo; here all boats are put together, all stores, arms and ammunition are distributed from this point, and every expedition equips itself at this depot.

At the time of my arrival, Stanley was planning a journey on the upper waters of the Congo. He had not visited these regions since 1877, and then the savage beings of the far interior answered his words of peace and friendship by flights of poisoned arrows and glistening spear-heads, and their war cry of *Niama ! Niama !*

(meat! meat!) warned Stanley and his followers of the ghastly fate in store for prisoners.

Stanley was determined to establish peace with these cannibal tribes, and for this purpose he proposed to found in the most populous districts, at intervals along the river, garrison stations in charge of white officers. After I had been at Leopoldville a few weeks, Stanley sent for me to come to his house, and he then told me of his intentions of making a journey and promised to give me command of one of the new stations, or rather he would appoint me to Lukolela, on the Upper Congo, 800 miles in the interior, at present a virgin forest. He would convey me up stream in the steamer and leave me at the place, then I might build a station, and when that was accomplished I might command it.

A few days after this interview, I embarked with Stanley on board the little "En Avant," a side-wheeler thirty-five feet long, and we proceeded up stream.

In September we reached my destination, Lukolela. As soon as Stanley landed, a slave was sent by the old chief through the village to beat an iron gong and summon all the headmen to a palaver. These natives had not forgotten the white man who floated past their village in 1877 with several large canoes and a strange craft, in which the crew used long paddles and sat facing the steersman. (This was Stanley's rowboat, the "Lady Alice," which played such a part in "Through the Dark Continent.") These people having no written language, have retained in their memories the most important events which have occurred; these being constantly mentioned become in time epochs of tribal history. "Arlekaki tendelé mboka bisu kala kala," mean-

ing "when Stanley (tendelé being the best pronunciation they could give his name) passed our village a long time ago," is one of the principal marks of time, and you constantly hear it mentioned. The Central Africans are great talkers, and in all their speeches they commence by referring to incidents which happened as far back as they can remember, and they tell of all they know, no matter whether it refers to the subject or not. For instance, a native accused by another of having stolen a fowl, will preface his denial by remarking, arlekaki, etc., etc. (when Stanley passed by our village). And from that time onward he will provide a most picturesque recital of his own good deeds in peace and war. How he had fought in the van of every tribal battle and returned from the fray victorious; how when the river was overflowing and fish were difficult to catch, the whole settlement would have starved had it not been for his cleverly handled nets; he alone remained sober when the remainder of the villagers were regaling on malatu (palm wine), and after giving a glowing account of his admirable characteristics, he will demand in injured tones: Am I the man to steal a fowl?

When the natives had to an extent recovered from the unusual excitement of a white man's visit, Stanley held a meeting with the chiefs, and giving them presents of cloth, brass wire, beads, and metal ornaments, received, in return, permission for me to build a station in the forest, about a mile above their settlement.

This transaction having been satisfactorily settled, it was agreed that I should undergo the ceremony of blood-brotherhood with the old chief Mungaba. The

custom of blood-brotherhood prevails throughout Africa, and its observance is the surest way of gaining the confidence of the native chiefs. It has with them a religious significance, and they conscientiously respect the rite. All African explorers have often owed their safety to the sacredness of the pledges given by chiefs whose favor and confidence they gained in this manner.

My prospective brother, Mungaba, and I took our places side by side, and a small incision was made in Mungaba's arm just below the elbow by one of my men, and one of the natives performed a similar operation on me. Our punctured arms were then rubbed together so that the blood might mingle, and during this part of the ceremony the circle of natives composing the audience repeated in a chanting chorus the duties which the one owed to the other henceforth. If one was sick the other had to attend him; if the one was at war his blood-brother must help him; all my cloth, brass wire, and trinkets, could be claimed by Mungaba; his hut and chattels belonged to me; my father and mother were his; his wives and daughters were equally mine.

Stanley waited to see me thus accepted into the bosom of an African family, then he and the remainder of the expedition embarked and proceeded up-stream, and I was left with seventeen Zanzibaris at Lukolela, in a dense forest, which had been far more familiar with the yawn of a leopard and the trumpeting of an elephant than with the human voice.

My first work was to obtain some sort of shelter. I made a small clearing by cutting down a few trees. Here I planted a small hut which I had purchased from

the natives. To complete my settlement in its embryo condition I erected a flag-staff, and hoisted the expedition colors, and, having no one in the district liable to be entertained by the remark, I whispered to *myself* that I was now chief of Lukolela. This was of course but a temporary abode, which would answer the purpose till I could construct a dwelling more substantial of clay with grass roof.

I soon realized that in order to get a truthful impression of my dusky neighbors it would be necessary to learn their tongue, and when the natives found out my intention they took the greatest interest in teaching me the words they thought most useful. They came into my hut at all times to supply me with the words that occurred to them. Some of the visits were made at very unseasonable hours. It was anything but a delightful experience to be rudely wakened, before the break of dawn, and find a great black woolly head reaching in the mosquito net, eager to assure me that *ngungé* was the native word for mosquito. However, by a persistent course of instruction received in this way, I soon passed from halting sentences to ordinary conversation, and after I had learned their tongue I ceased to feel lonely or look upon my neighbors as strangers.

When I had grasped their language several abbreviated forms of expression revealed themselves to me.

In all their legal discussions the word *nyo*, the utterance of which is accompanied by drawing the end of the first finger down from the inner corner of the eye to the mouth, is an emphatic negative, and plays an important part in legal debate. The Central Africans

have two words for no, *té* and *nyo*. The former word is weak and unreliable, and the native is not at all offended if you doubt his word when he uses it, but he will draw his knife in earnest to support his "*nyo*."

When an offender against some tribal law is delivering an oration in his own defence, he at first utters all his negative sentences in the affirmative, and then reverses them to the intended sense by the use of "*nyo*." The use of *nyo* is a convenient means of gaining the full attention of one's hearers, as it is tribal politeness for the whole audience to have their fingers ready to chime in with the speaker's *nyo*. The effect of this custom is very curious, as a chorus of lusty voices is added to the utterance of every negative.

The most forcible of the Congo abbreviations is the one expressive of absolute fulfilment of promise. It is a sound produced by screwing up the mouth into a whistling position, then blowing a sharp breath, and at the same time passing the hand rapidly across the mouth close to the lips, making a noise like the sudden escape of steam.

I will cite an instance of the use of this expression. An old chief named Manjimba one day visited my station and sadly narrated to me how his village had been surprised by an inland tribe of hostile natives, who had killed some of his people and taken others into slavery.

"Why don't you punish your enemies? you are able to do so. You have a fine following of stalwart warriors all well armed with spears, knives, arrows and shields. Why do your men carry such arms, if they remain inactive after such an unprovoked assault?"

Manjimba answered in tones of unmistakable deter-

mination: "Yes, I intend to fight them; before many days are passed my warriors and myself will steal through the forest and pounce upon the marauders at night. I will treat them in the way they treated me." Having uttered this threat he picked up his spears and shield, and, affably wishing me good-bye, he strode home to attend to the warlike project in hand.

After a few weeks the old chief returned to my station and stood in an imposing attitude before me. I at once recalled our last conversation, and asked him the result of the venture. A lusty puff of breath rendered into a mild explosion, by the rapid passing of the hand across his mouth of exhalation, was Manjimba's answer, after having informed me of the result of this expedition by this effective sign. A savage smile on the old warrior's face endorsed its meaning, which was, of course, that he had carried out his threat in its entirety.

In the equatorial regions of Central Africa, day and night succeed each other with but slight interval of twilight throughout the year. In these latitudes it is light in the morning at half-past five, and dark at half-past six. The rooster is the native alarm clock, his note proclaims the approach of dawn. One bird will give the signal at daybreak, his call will be answered by all the others one after another, till every rooster within hearing has taken part in the proclamation and warned everybody that it is time to get up. After this there is a lazy lull for half an hour, and then the day commences in real earnest amidst the strange hubbub of a Central African village. All the natives now leave their huts, and big log fires are soon blazing just out-

side the doorways. The old people cluster round these till the sun has risen and warmed the damp, cold morning air. The grown people defer their bathing or washing till later on in the day, when the sun is hot; but the helpless baby is not consulted as to his wishes on this subject. The Africans are a very hardy race, and I am convinced that it is to a great extent owing to their early introduction to the strengthening effect of cold water bathing. Every morning the women file down to the river edge to give their babies a bath. The mother walks knee deep into the stream, then catching the half-awakened infant by the waist, she dips him into the chilly water and holds him firmly as he wriggles beneath the surface. It always happens that several women are so occupied at the same time, and they naturally engage in conversation often of so interesting a character that the infant in the water is almost forgotten, till his frantic struggles and tugging warn the dusky parent that he is not amphibious. The child is then hauled out, but before he has time to recover, his violent spluttering and choking are again lost in the depths of the muddy stream. After repeating this operation four or five times, the mother carries the bewildered piece of ebonized humanity back to the village hut, and spreads him out on a mat in the sun to gradually recover from the shock. This seems to me to be rather a rough and uncomfortable means of providing for the survival of the fittest.

Everyday from about daybreak till noon the women work in their plantations of manioc-root, sweet potatoes, peanuts, yams and bananas. The men employ this part of the day for blacksmithing, carpentering,

hunting or fishing. When at mid-day the women who have been superintending the cooking announce that the meal is ready, all work at once ceases, and groups of ten or a dozen hungry darkies form around each earthen pot which is soon emptied by the natives' nimble fingers, which they use as both fork and spoon. When they do obtain these articles of cutlery from a white man, they punch a hole in the handle and wear them around their necks as jewelry. The staple food in this part of the world is fish and manioc-root with occasional dishes of elephant, hippopotamus, buffalo, crocodile, monkey and toasted caterpillar and paste of crushed ants.

After this meal the natives seek out the shady nooks of the village and, sheltered from the blistering heat of the noon-day sun, they attend to their odd but elaborate toilets. Far away in the heart of Africa, on the shores of the Congo River, though there are no milliners or outfitters to issue fashion plates nor a "four hundred" to lead the mode, still the dusky savages are keenly ambitious to appear stylish according to their tribal ideas and customs. Hair-dressing is one of the principal obligations and constitutes one of the duties of the "fair" sex. The woman sits down on a reed mat and the man upon whom the operation is to be performed reclines at full length, resting his head on her lap. She then ravels out his hair and with a coarse wooden instrument, resembling a child's toy rake, she combs it thoroughly until it is clear of all entanglements, and stands out all over the head in a thick bushy mass 6 or 7 inches deep. It is now generously greased with oil, then parted off into sections and cleverly woven

down close to the head, and the ends are arranged according to the prevailing taste. Sometimes series of little plaited strands like rats' tails are formed and hang around the head in a fringe; often solid plaits of hair about the size of a goat's horn are made to stand out from the head in different styles. Two of these will appear sprouting from the top of the head, or one will drop over the forehead and lie along the nose. Both men and women have their hair treated in the same way. The plaiting operation is also extended to the man's beard, the moustache and eye-brows are shaved off with an iron razor, which is a small cheese-cutter blade with a long slender handle. This is used somewhat as we hold a pen, and the stubbly hair is really chiselled off the face, no small amount of it being dragged out by the roots. A still more painful operation is the plucking out of the eye-lashes. Yet tribal disgust knows no bounds if this custom is not strictly adhered to. Often a native whilst speaking with me, has accompanied his remarks by forming a pair of nippers with the edge of his blade and his thumb and then deliberately pulling out his eyelashes, and when one eye was filled with water, and big tears rolled down his cheek then he attacked the other till the first was sufficiently recovered to admit of a renewal of the operation. This is of course a most idiotic custom in a land where the eye-lashes form such a splendid guard against the myriads of insects with which the air seems always to be charged. Yet the natives do not seem to feel any discomfort from getting anything in their eyes. They will take out the obstruction by pushing a pliant tiny stalk in between the eye and the lid, and scraping

round inside till the obstacle is removed. The natives of Lukolela have often told me that it was a mystery to them how I could hit even a buffalo with my sight obscured by eye-lashes.

Another item of the toilet is the treatment of the nails ; they must be cut close to the finger ends, and any one posing as beau or belle must have some of the nails entirely pared off exposing the quick.

All their efforts to improve their natural physique are unsightly disfigurements. Naturally they have beautiful regular teeth, but in that condition they do not appeal to the native taste. Some of the front teeth, often all of them, must be cut away into sharp points. The method of effecting this is the most nerve-shattering ordeal which Congo society suffers. The village blacksmith takes the patient's head between his knees, then with a small chisel-shaped instrument, and a block of wood as a mallet, roughly chips the teeth to the shape desired. The teeth thus rudely robbed of the protecting enamel, soon decay and break off, and the mouth studded with short blackened stumps is a most repulsive sight.

The natives are very conservative, and what their forefathers did before them they are quite content with now, no matter how painful or inconsistent the obligation may be.

Each tribe has a different way of cicatrising face and body. The Ba Bangi have rows of little gashes cut across temples and forehead. The Cannibal Bangala have a line of large pimple-like protuberances running right down the forehead to the extreme end of the nose, resembling a thread of large black beads. The Ngombé

people supplement this by carving the same ornamentation in a half circle from the bottom of the ear to the corner of the mouth. The Balolo succeed in disfiguring themselves more hideously than all the others. They raise large uneven bumps between the eyes and the cheeks and on the chin. These are cut in childhood and are repeatedly dug around and aggravated till the scarred bump is about the size and shape of half a walnut shell. Some of this tribe devote attention to the cultivation of bumps on the nose, and the result seems to suggest that the final effort was to have the extreme end of the organ adorned with a grotesque mound of scarred flesh. Castings of some of these faces would make effective masks for pantomime hobgoblins.

The sole attire of these natives is a small loin cloth neatly and artistically woven from the sinews of pineapple leaf.

To be fully dressed these Central Africans must smear their bodies liberally with a paste composed of powdered red-wood (Ngula) and palm oil. This operation is a substitute for bathing and refreshing themselves.

When all the items of the toilet have been properly attended to, the popular idea of beauty does not depend on the result; the Mwasi Mompala (the pretty woman) according to the choice of one tribe is not at all the taste of another district. At Lukolela admiration was expressed for a long neck; she might squint and be bowlegged, but these defects counted as naught if she had a long neck (nkingu isanda). In another section of the land corpulency was the recognized form of beauty, and one tribe acknowledged only as a pretty woman her

of a very light color. The color of the natives varies very much, and ranges from a blue-black to a very light reddish-brown.

When I had been living amongst the natives some time, they felt sufficient interest in me to suggest that I should submit to some of the operations decreed by tribal habit. They were anxious that I should have my forehead and temples decorated with their national tattoo scars. They tried to persuade me to allow my hair to grow long and they would then plait it in designs like their own. They suggested that their village blacksmith should chip my teeth to sharp points, and expressed their disgust at my eye-lashes by calling me "misu-nkongé" (man of eye-lashes). Much as I wished to please my dusky friends, I failed to appreciate the charity of their wishes. They had not reflected that I hoped some day to return to my native land. It was, however, satisfactory and consoling to be told that if I would follow their customs, and then were a little blacker, I should be Mobali-Mompala, a good-looking fellow.

Amongst travellers the natives are hospitable, but their generosity is tempered by caution. If one man has a gourd of native wine he will not trust it in any one's hands; he will measure the allowance which he intends a friend to have. I have often given a man a spoonful of salt as a present; the recipient would not use this for cooking purposes, but would slowly consume it by occasionally dipping the end of his tongue into it. If a friend should ask for a taste of the luxury, he would not trust the stranger's tongue into the supply, but he would himself take a small pinch and place

it on the finger end, then invite the friend to take it with his tongue, at the same time he would cover the salt over with his hand.

I found that at Lukolela I was in the centre of a rich hunting country. The woods around my station and the vast swamp plains on the opposite shore were the feeding grounds of elephant, buffalo, hippopotami and antelopes.

Prowess in the hunting field at once obtains for the white traveller the respect and confidence of the natives. Not only do they admire the man who will risk the wild charge of a wounded bull or a rogue elephant, but they have an earnest appreciation for any influence which can furnish a meat supply. Owing to my success in the hunting field, I received the name of *Ma-kula*, literally "arrows." They wished to call me *cart-ridges*, but they had not a native word, so they supplied a name the nearest they had to it. I obtained this proud title merely by a fluke. At the time of my first arrival at Lukolela, I knew but very little about a rifle. I foolishly imagined that I could fire and hit an animal in the head or heart or any other part of the body I decided upon, and then without further trouble I might have a broiled steak for the next meal! One day an excited villager rushed into my clearing and gasped out the news that a big buffalo had taken possession of his wife's plantation and threatened to destroy all her crops. My dusky friend implored me to go and kill the beast. At that time I was not acquainted with the hasty temperament and revengeful disposition of these animals, so I promptly accepted the invitation despite my inexperience. As I tramped off on my errand of

slaughter, a crowd of natives followed, and when we neared the place where the animal was supposed to be, all climbed into trees so as to see from safe quarters the interesting developments which might result from the competition between a Snyder rifle and an ill-tempered bull buffalo. Even the man who had invited me to this contest deserted me when we arrived in the vicinity of the game. In a few hurried whispers and some ingeniously suggestive signs, I was urged to believe that it was a great advantage to conduct such a venture alone. It was no time for argument, so I crept along stealthily through the long grass in the direction pointed out, and very soon I could see, just a little ahead of me, the shaggy old buffalo leisurely cropping off the tender leaves in a peanut patch. As I cautiously levelled my rifle above the grass the great brute, about thirty yards away, caught sight of me; he stretched out his neck and switched his tail in a very angry manner, and I at once lost confidence in my ability as a slayer of big game. My previous calculations with regard to this shooting question had not been carried on under such formidable conditions; however, my reputation was at stake, so with unsteady aim I pointed my rifle and fired for a spot behind the shoulder. The buffalo staggered for a few moments, then fell heavily to the ground dead. Upon examining the carcase, I found that my ball had entered the brain, two feet from the place I had aimed at! The natives were amazed at a single bullet killing a tough brute like a buffalo; not knowing the truth of my fluke shot, they attributed the animal's death to my clever shooting. And they decided to duly record the event by bestowing on me

the native name Makula, an envied title which the native hunter can only earn by attacking on foot elephant and hippopotamus with a spear blade; and I stole the reputation by a chance shot.

The natives living around my station were a light-hearted friendly people, and it required but a little tact and patience to preserve at all times friendly relations with them. Considering their wild environment, the Central Africans are wonderfully educated; they aim to acquire ability which will enable them to enjoy the benefits of their surroundings and will also aid them to battle with the perils and difficulties attending life in these regions.

The boys' favorite pastime is mimic warfare; sides are formed and they attack each other with blunted spears and wooden knives, and at a very early age become excellent marksmen. Such a training can be received none too early, for often when only 11 or 12 years old the young African fights to the death in defence of the village huts.

Every boy also becomes an expert swimmer and paddler, learns how to shape out iron weapons and wooden utensils, and by accompanying the parents on fishing and hunting expeditions, becomes thoroughly acquainted with the habits of the animal world and is instructed how to make and arrange nets and traps.

The Congo River teems with fine delicious fish and the woods everywhere are scarred by tracks of big game, principally elephants and buffaloes.

The young girls receive from their mothers instruction in the various domestic duties which they will in after life be called upon to perform.

When ten years old the Congo negress has her own little plantation to attend to, and she has learned how to properly cook the manioc, sweet potatoes and yams she has grown ; moreover she can toast to perfection a hippo or buffalo steak, knows each kind of insect and caterpillar that graces the Congo bill of fare.

By day they all define the hour by the position of the sun in the heavens, and they reckon the days by the moon's shape.

It is very difficult to impress upon the natives the vast extent of the white man's land (Mputu). They have seen so few white men, comparatively speaking, that they cannot realize our having a big country. Upon my asking them to draw in the sand the relative sizes of Mputu and their own little village, they would represent the latter by an immense circle several yards in diameter, but our country would be defined by a tiny ring a few inches in diameter.

Although the coast natives have been thoroughly demoralized by the introduction of strong liquor, its importation into the interior is sternly prohibited, and the natives on the Upper Congo have nothing stronger than *malafu* or palm wine, the milky sap of the palm tree. When fresh it is exceedingly refreshing and palatable, but in a day or two it becomes sour and is then intoxicating.

There is an animal on the Congo, which, from Paul du Chaillu's description of the gorilla, I should consider is the same animal ; by the Zanzibaris it is called *soko*, by the natives *esumbu*. It is brown-haired and large-eared with round face, smooth except the eyebrows and a scanty beard. This large monkey, if we are to be-

lieve the Congo negro, is descended from a man, who in ages past had drifted into debt and difficulty in his village and then fled to the woods to escape his creditors, and while waiting for his troubles to blow over, his limbs changed their shape and his body became covered with long hair. The women are much frightened of this animal, believing that he will carry away them and their children as captives if he has the opportunity. The actions of these animals are certainly very remarkable. I have heard a family of them making a peculiar noise like the rattle of drums, which is produced by beating on their chests. At times these sounds would cease, evidently at a given signal from the leader of their simian orchestra, then the air would be filled with shrill cries such as one hears from a large gathering of school children when school is dismissed.

The spirit of the Central African's religion is the dread of evil spirits. He believes that an unseen power is always present seeking opportunities to injure mankind. His superstitious mind attributes to this mysterious and malignant influence all reverses and disasters which he may suffer through life. When the crops fail the *moloki* or evil spirit is blamed for the misfortune; and if they fail to kill their game or win the battle it is credited to the same phantom maliciousness. Everywhere this antagonistic influence is lurking—in trees, in the stream, in the bodies of men, beasts, and birds, and reptiles the evil spirit is hiding, adopting the guise most convenient for the intent.

The African has no idea of gratitude for any beneficial surroundings. He feels that he has a right to life in a land where the forests are full of game, the

river teeming with fish, and the soil nourishing to perfection crops of fruit and vegetables. Life to him seems no free gift, but rather something to be dexterously snatched from the hand of adverse circumstances. Let him escape unhurt all the dangers incidental to his search for mere subsistence, and let him amass wealth, yet he cannot enjoy these benefits. Everything in earth and sky threatens his existence. He is always liable to an attack from savage beast and venomous reptile, to sickness and the slave raiders.

The imagination of the savage surrounds life with awe and mystery. He is continually in fear. Influences obnoxious to him lie concealed in every object. Trees, stones, herbs, all contain imprisoned spirits which, if released, may rend and destroy him. When he is least conscious of it he may be offending some spirit with power to work him ill. Sleeping, eating, drinking, canoeing, hunting, fishing, and fighting, he must be protected by ceremonies and observances from hostile influences, and he must be provided with charms for every season and occasion. The necessity for these safeguards has given rise to an elaborate system, and has created a mystical class called *nganga* or charm doctors. These individuals are the interpreters of the relations between man and the unseen powers. They dismiss evil spirits, furnish charms, and prescribe and regulate all ceremonial rites. A charm doctor can discover who it was that caused the old chief to sicken and die, or even who blighted the palm trees and dried up the sap; and, by his insight into the spirit world, he can discover the culprit, can interpret dreams, and predict the coming events.

The nganga or medicine man is always a conspicuous figure in a village. He wears a tall hat of animal skin, around his neck hang strings of specimens of his wares, and slung around his shoulders are little parcels of charms into which are stuck birds' feathers. Metal rings, to which mysterious little packages are attached, clash and clang as he walks, serving, together with a liberal assortment of iron bells, attached to his person, to announce his presence; and, as if the body did not offer a sufficient surface to display all his magical outfit, he carries, suspended from his left shoulder, in a large woven pocket, a load of wonder-working material, a curious assortment of preventives, eagles' claws and feathers, fish bones, antelope horns, leopard teeth, tails and heads of snakes, flint stones, hairs of the elephant's tail, perforated stones, different colored chalks, eccentric shaped roots, various herbs, etc. His idea in carrying around this property is that thus equipped he can administer some devil-proof mixture to suffering humanity.

The flight of the poisonous arrow, the rush of the maddened buffalo, or the venomous bite of the adder can be averted by the purchase of these charms, and the troubled waters of the Congo can be crossed in safety by the fisherman's frail craft. The Moloki, or evil spirit, ever ready to pounce upon humanity, is checked by the power of the Nganga, and halts at his whistle through an antelope's horn, or the waving of a bunch of feathers.

During the earlier part of my residence at Lukolela the natives supposed that I was one of the wonder-working individuals; my strange belongings, watch,

compass, rifle, revolver, field glasses suggested this idea which I did not deny, and on several occasions I was able to turn this to account. Once several large canoes put into my beach and the paddlers swarmed up to my hut to see me and hear me talk ; my vocabulary was a small one at that time, but I was ambitious and endeavored to explain to them all I knew of Europe, Asia and America. My audience was evidently very much entertained, and they decided to carry away a souvenir of the occasion by stealing my only saucepan. This utensil I was determined should be returned, so I called together some of the headmen, explained my loss and told them that if the saucepan was not returned by sun-down I wished them to come to my house and I would give them an exhibition of my mystic powers. The saucepan was not returned by the time stipulated, and the chiefs arrived. Previous to their arrival I had poured out a little brandy in a cup. When they were seated I gravely informed them that as the saucepan was not returned, I would give them an exhibition of my supernatural powers, and then I asked if any of them had ever seen water on fire. To which question they replied no, and said they did not believe water would burn. When I carelessly put fire to the brandy, they were aghast with astonishment. Now, I said, my saucepan must be returned by sunrise to-morrow ; if it is not, I will set the whole river on fire ! Fortunately I was spared the necessity of carrying out this dreadful threat.

To his religious functions the charm doctor unites those of surgeon and physician, and in this capacity displays considerable knowledge.

In the extraction of rude bullets, fired from old flintlocks, the Nganga displays great skill, although he always attributes such ability to the agency of his wonder-working charms.

The natives have a strange combination of characteristics; they are light-hearted, plucky, industrious and stanch friends, but still they are pitilessly cruel, and delight to witness human suffering and the spilling of human blood.

Horrible ceremonies result from the belief that death leads but to another life, to be continued under much the same conditions as the life they are now living. A chief thinks that if, when he enters into this new existence, he is accompanied by a sufficient following of slaves, he will be entitled to the same rank in the next world as he holds in this, and from this belief arises the hideous ceremony of slaughtering innocent slaves. Upon the death of a chief owning fifty slaves, twenty or twenty-five of these will be executed so that their spirits may accompany their dead master to the next world. The men are decapitated, the women strangled. When a woman is to be sacrificed she is adorned with bright metal bangles; her toilet is carefully attended to, her hair neatly parted, and she is draped with bright cotton cloth. Her hands are then pinioned behind and she is then suspended by the neck from a limb of a tree, and whilst the body swings in mid-air its convulsive movements are imitated with savage gusto by the spectators.

Upon the occasion of an execution all peaceful occupation is thrown aside, and old and young of both sexes give themselves up to the indulgence of the ghastly spectacle.

At early morn a peculiar slow beating on the wooden drums announces to the savage audience that an execution is about to take place.

The natives hurriedly leave their huts and very soon groups of men and women and children form themselves into circles, and excitedly perform dances, accompanied by boisterous singing, blasts from war-horns and drumming. When the slave is produced and preparations are made for his execution, he is at once surrounded by a brutal mob, which indulges in drunken mimicry of the contortions of face which the pain caused by the cruel torture forces him to show, and their frenzy increases till the climax is reached, when the executioner ends the poor wretch's misery by striking off his head.

One who has lived for some time in Central Africa comes to understand the little impression that acts of the most atrocious and wanton cruelty make on the savage mind. Surrounded from childhood by scenes of bloodshed and torture, their holidays and great ceremonies marked by massacres of slaves, the mildest and most sensitive native becomes brutalized and callous, and if this is so with the free, what must be the effect on the slave, torn when a child from its mother and doomed to privation and hardship even in its infancy?

Cannibalism and human sacrifices are attendant upon slavery. The man, who purchases another for a few fathoms of cloth or a few beads, buys him body and soul to do with just as he will. He will kill him to signalize the death of a freeman, or he may sell him for food to an Ubangi cannibal.

Even the declaration of peace demands the death of

a slave. Whilst up the Ubangi River, upon approaching the large settlement of Ndisi, I was horrified to see a corpse suspended by the heels from a bar lashed at the top of two tall poles. It had evidently been there about a week and was frightfully decomposed. Upon reaching a neighboring village we learned the reason of this sacrifice. Old Ndisi had been at war with a neighboring tribe for several years, and both parties had come to a peaceful understanding, and they decided to celebrate the event by hanging up a slave by the heels till he died.

There are two kinds of slavery in Africa, inter-tribal and that carried on by the Arabs. The latter is by far the most important.

The dimensions of slavery in Central Africa are increasing. The Arab man-hunter, fascinated by the rich profits from his slaves and ivory, does not retire from business; he buys more guns, hires more murderers and increases the sphere of his operations.

Vast armies of Zanzibaris and Manyemas, officered by Arabs, are constantly engaged in the capture of the natives and the robbery of their ivory. The Arabs make no pretence to legitimate commerce; with their superior weapons and overwhelming numbers they can without difficulty overcome the poorly armed natives. Actually the slave traffic is subservient to the acquisition of ivory, for the Arabs capture the natives and then ransom them for ivory. Their plan of action is to stealthily surround a village by night, then at early dawn to fire off a few muskets to intimidate the villagers. Bewildered at the rude awakening, the poor creatures rush out of their huts and fall an easy prey

to the inhuman villains who leap into the village from all sides. All who resist are shot down or stabbed, and the remainder, old and young, are taken prisoners and are herded into a stockaded pen and there guarded night and day.

The Arabs then open up negotiations with the surrounding villages and exchange their captives for ivory. One big tusk weighing sixty-five pounds will grant the release of one slave. The Arabs remain in such a camp till the district is drained of its ivory, then the slaves who have not been ransomed are loaded down with ivory, and the merciless pillagers move along to a new hunting ground. The cunning Arabs purposely keep the native tribes at enmity amongst themselves by employing some as allies against a neighboring settlement. In the cannibal regions the payment for such service is meat, or to be more explicit, the dead bodies of those cruelly slain in the raids. The Arabs encourage the most brutal and barbarous customs among the interior tribes. Ceremonies involving human sacrifice and cannibal orgies create a demand for slaves, which the Arab will supply when the payment is ivory. The Arabs are not merely a few brigand bands scattered over the land, but a powerful, well-organized system of robbery and persecution, extending throughout the heart of Africa.

The slavers have several strongholds in Central Africa, the principal being Tabora, Karema, Kasongo, Nyangwé, and Stanley Falls. Large hordes of hired robbers branch out into all directions from these depôts and swarm over the whole land. They start out with their muskets and a few loads of ammunition, and re-

turn with slaves and ivory, obtained by theft and murder. The ivory eventually reaches Zanzibar on the east coast. Every tusk, already foully purchased by innocent lives, demands still more sacrifice before the delicate substance, daintily carved, graces some fair one's boudoir, where amidst its refined surroundings its bloody history is buried. It has been frequently said by travellers who have followed the trail of the slaver that so littered is the way with whitened skeleton and skull that these grim relics would guide you to the coast. It is a wonder that any of these carriers reach their destination. Given enough food only to keep life flickering in their emaciated bodies, covered with festering sores from the chafing slave fork and chain, goaded by the cruel lash from morning till night, they are driven along the trail, suffering all the indignities and persecutions which the devilish minds of their vicious masters can invent and carry out.

The occupation of Central Africa by the European powers must inevitably hasten the solution of the giant problem—how to suppress slavery? The Germans, British, French, Congo Free State have portioned out amongst themselves the whole of Equatorial Africa. Previous to this occupation it was the actual duty of no government to interfere in Central African politics; but now the European powers must establish law and order in their territories. The Arab slavers will not desist from their fiendish calling till compelled by force. The keys which they hold to a rich source of profit in Central Africa cannot be wrested from them without a fierce struggle.

The suppression of slavery is a monster undertaking,

but stern measures for its accomplishment are being carried out with grand deliberation. The Congo Free State, the Germans and the British, are all the time strengthening their forces and pushing on into the interior, contracting the Arab's sphere of operations into smaller limits. The Arab slavers, cut off from their supplies of ammunition from the coast and barred from northern support, must in a few years' time be crushed by the well-armed forces of civilization and its native allies.

No one has done more for Africa than Stanley ; his tiny trails are being worn into broad rows ; whole nations are following in his footsteps, determined to establish law and order at all cost. A noble chapter is being added to African history. A grand response is being given to the cry for justice from the helpless slave. The downfall of the Arab slaver is imminent, and the illumination of the Dark Continent is being heroically conducted.

MR. CARL LUMHOLTZ IN NORTHERN MEXICO.

The following letter was received August 22:

SIQUIRICHI, 16 July, 1893.

DEAR MR. H.:—

I hope you have, this year, received two letters from me, the last one of 29 May. I followed the Rio Fuerte down from Morelos to San Ignacio, making investigations among the very few surviving Tubares. I succeeded in getting a rather complete vocabulary of their language, including pronomina, verbs and phrases.

They bury their dead differently from their neighbors, the Tarahumares and Tepehuanes, in underground vaults or cavities. A few individuals, both male and female, were photographed and anthropometric measurements taken.

Nearly the whole Tarahumar land is drained by Rio Fuerte and its numerous tributaries, so, after having passed the pueblo Tubares, this river carries a great body of water. It is in the numerous *barrancas* watered by Fuerte and its branches that the gentile (pagan) Tarahumares live. In the dry season, from April to June, the gentiles make long excursions down the river to catch fish. The size of the river does not here allow any more of their usual method of fishing, by poisoning the water. They make a kind of fishing net by fastening together a dozen or more of their blankets, and on my travels down the river I saw some of my gentile friends catching in one hour quite a cartload of fish, mostly "suckers."

My road brought me over Rodeo once more to Batopilas where I, after over a year's absence from civilization, truly enjoyed four days civilized life in the hospitable house of Mr. A. R. Shepherd, director of the hacienda. The heat in Batopilas, as situated in a *barranca*, is very great, and the thermometer, every day of my stay here (first half of June), showed over 100° Fahr. in the shade, up to 106°.

From Batopilas I again ascended over 4,000 feet to the table land, travelling in a southerly direction for three days to Sta. Anita, where I remained over a fortnight. Nearly starved out from its dry, hot *barrancas*, I made my way to Gueguachic, from where I now am on my way back to Chihuahua and then to Chicago.

It will be refreshing both for soul and body to reach civilization again. I seldom get an opportunity to read as I don't get time to look at the few books I have. On account of my wandering life, mail but rarely reaches me. I am very fond of natives and of Mexicans, too, for all that, but, having this kind of people as sole companions for month after month, you long at last for something better.

Provisions are very scarce in the Sierra and, unless a man can live like the Indians themselves, he should not attempt to travel among them. I shall not trouble you by telling you how I fare; enough be it to say that, although I at present find myself among the most well-to-do Indians, it is extremely difficult to buy an *almud de mais* (just enough for four men for one day.)

The gentiles have at present absolutely nothing to offer you but mezcal—the heart of the maguey toasted. Nevertheless, my health is good and I hope to return here in November to continue my journey into Guatemala, following the crest of the Sierra and making such investigations among the Indians as a year's time will allow me.

As the cave-dweller question now for over a year has occupied my attention very much, it may be appropriate to supplement what I before have stated on this subject. The Tarahumares are very fond of living in caves, but in most cases temporarily. Permanent cave-dwellers are not numerous, either among the so-called Christians or the gentiles. The Tarahumares generally plant corn on more than one place and have to move in order to save and to harvest, and also on account of their domestic animals for which they have to provide pasture according to the season. For this and other reasons a Tarahumar may change abode six times a year or more. In accordance with early training of the missionaries and constant admonitions of their present authorities, the Christian Tarahumares, as a rule, move in to the pueblos in the winter, but many, also, remain on their ranches or settle down in some cave. The gentiles have ranches on the mountain sides or on the tops of the barrancas (*cumbres*) but down in the barrancas they also plant corn at a later season, when the rains commence in June and July.

After having thus harvested his corn in the high localities, the gentile Tarahumar goes down to harvest in the barranca, where he almost invariably lives in caves. In May and June, when whatever little maize and beans he may have raised are gone, he wanders in the barrancas looking for fish and pitayas; and he may sleep in a cave or under a tree or wherever he finds it most convenient.

I have seen gentile Tarahumares have their caves close by, some 500 or 1,000 yards lower down towards the bottom of the valley. Here they like to live in the rainy months and in the winter; for the Tarahumar house, if he has one, is a miserable shed, covered with straw or the like. It is also a peculiar fact that, whether Christian or gentile, he does not sleep in his house. Husband and wife go at night to sleep under a tree, in a cave, or near the storehouse for maize, leaving the *to-cois* (boys) and *te-we-kes* (girls) to take care of the house.

Rarely do they make improvements in the caves, beyond building small peculiar round houses of stone and mud, as storerooms. They also make storerooms in remote caves. Other improvements in the caves are walls that do not reach to the top of the cave, mere partitions of stone and mud, or stone only; but they are rudely made and bear no comparison to what I have seen in the caves of the south-west of the United States.

The Tarahumares, moreover, do not live together in numbers; each family has its cave, and the caves are generally far apart. The pottery made by these people is rude and without decoration; but they show a marvellously developed artistic

sense in designing patterns for their girdles and blankets, which display very great variety and pretty combinations.

As already said, the Pimas to the north and the Tepehuanes to the south, the former particularly, share the Tarahumar predilection for caves.

These three tribes greatly resemble each other in appearance and mode of life, and yet with marked differences in some respects. The Tarahumares, for instance, take no account of puberty but marry a girl at any age, while it is considered among the Tepehuanes that a girl, who omits during the first three months a solemn purification, will bring disaster upon herself and upon others, almost as if the world were coming to an end.

Of the three tribes the Tarahumares being, to say the least, one of the most primitive races on the continent and among those least affected by civilization, remain much the most interesting. They are, also, strong in number. Without having had access to the official reports of the census, naturally not very exact with regard to Indians, I should estimate them at about 35,000, of whom 3,500 or 4,000 are gentiles. A Mexican gentleman, who has held the position of *Jefe politico* and who takes a greater interest than any one else in these Indians, estimates their number at 100,000, about equally divided between Christians and gentiles. He, however, has not travelled among these people, and, while I claim for my own figures no more than an approximate value, I am convinced that his are absolutely wrong.

Yours very sincerely,

CARL LUMHOLTZ.

GEOGRAPHICAL NOTES.

BY

GEO. C. HURLBUT, *Librarian.*

CYCLONES IN AUGUST.—The Pilot Chart of the North Atlantic Ocean, for September, issued by the U. S. Hydrographic Office, shows the course of the four cyclones which traversed the ocean in the latter half of the month.

The first passed to the westward of Bermuda about 8 A.M. (Greenwich M. T.), August 16th, curved to the N. N. E., and was central at noon about 35° N. Latitude, 65° W. Longitude. At noon of August 17th it was central about 44° N. Latitude, $56^{\circ} 30'$ W. Longitude. Thence it continued to the N. N. E., crossed close to Cape Race and disappeared to the northward.

The second cyclone originated to the N. E. of Martinique, August 15th, passed S. of Santa Cruz on the 16th, and at noon of the 17th was central near the east end of Haiti. Through the night of the 16th–17th, it blew a hurricane at Puerto Rico. On the 18th at noon the centre was near Turk's Island, and at noon the next day about 60 miles N. E. of Cat Island. On the 20th, near N. Latitude 29° , W. Longitude 76° , the track curved to the northward and eastward and at noon, August 21st, the centre was about Latitude $37^{\circ} 30'$ N., Longitude

71° W. In the night of the 21st the cyclone crossed Nova Scotia, and on the 22d it passed over northern Newfoundland and thence to the N. E.

The third cyclone originated August 20th, N. E. of St. Thomas, and passed to the N. W. and then N. N. W. It reached Cape Hatteras at midnight of the 23d, and moved directly toward New York, where it was central at noon of August 24th. It did great damage on the coast.

The fourth was first reported, August 25th, N. E. of Crooked Island. It followed a northwestward course through the Bahamas and struck the American coast, in the night of August 27th, near Savannah, Georgia. This was the last intelligence received at Washington before the publication of the Chart; and it was only in the first week of September that the country learned with what fury the hurricane had swept the South Carolina coast. Towns and plantations have been destroyed; more than a thousand persons have perished, and between twenty and thirty thousand are left homeless and without means of subsistence. The Governor of South Carolina, under date of September 7th, has appealed to the people of the United States for help, and the following extract from an official report made to him by Dr. F. W. Babcock shows the urgency of the case:

COLUMBIA, S. C., September 7th, 1893.

His Excellency B. R. Tillman, Governor, Columbia, S. C.

SIR: As a result of investigations made at your request I submit the following report:

Three days were spent in making personal visits to the islands around Beaufort, and I there found the situation so serious as to demand immediate attention.

All that portion of South Carolina known as the Sea Islands, and those parts of Colleton, Berkeley, Beaufort, and Charleston counties subjected to tidewater influences were more or less seriously damaged by the cyclone and high tide of Sun-

day, August 27th. The destruction of crops and homes was more especially noticeable on the exposed islands, which include Johns, Edisto, Port Royal, Wadmalaw, Coosaw, St. Helena, and the others adjacent. The territory adjoining Combahee, Ashepoo, and the neighboring rivers was found to have suffered serious losses.

At the lowest estimate fully 1000 lives were lost. The coroner of Beaufort places the number at 800. The storm swept away at least one-half of the homes on the islands facing the ocean, such as Coosaw, St. Helena and Edisto Islands. I may state that on Land's End, Pollywana and Hope plantations the survivors are crowded into the few houses that withstood the storm. These islands are inhabited by a population of about 45,000 people, most of whom are dependent upon their crops for support.

The plantations of that section have no right to expect more than an eighth of the ordinary crop. The people are to-day living on salted potatoes they have gathered, together with corn saved. This cannot last long. There are from 20,000 to 25,000 people who will have to be supported almost wholly until another crop can be planted, about April, when they can secure advances.

DR. NANSEN'S EXPEDITION.—The London *Times* of July 24th prints this telegram dated July 21st, from Berlevaag (misspelled *Berlevang* in Stieler's Atlas) on the north coast of Norway:

"We are leaving Vardö for Yugor Strait (between Waigatz Island, south of Nova Zembla, and the coast of Russia), where thirty sledge dogs will be waiting for us. We then proceed along the Siberian coast eastward past Cape Chelyuskin to the Olenets River, near the Lena, where another twenty-six dogs will be waiting for us. We then turn northwards, and hope to reach the west coast of the New Siberian Islands in the end of August if the ice is not bad. The latest information about the ice conditions in that quarter is favorable. We then proceed direct northwards until we get fast in the ice. If we meet with new land we shall follow along its west coast northwards. When there is no more open water we shall allow the Fram to drift with the ice. Everything has gone on well up to the present. The Fram is a splendid strong ship and will stand the ice-pressure well. She is deeply laden with coal, but that is a drawback which will soon be remedied. The accounts of the ice in the White Sea and the Barents Sea are not favorable. There has been much ice, but hope it has now improved; the ice changes quickly. I have good hopes; if we only get through the Kara Sea in good time I feel certain the prospects of success are good."

FRIDTJOF NANSEN.

MR. PEARY'S EXPEDITION.—Mr. Peary's vessel, the *Falcon*, after taking in coal at St. John's, Newfoundland, on the 13th and 14th of July, steamed up the Labrador

coast and reached its destination in Greenland on the 3d of August. The voyage is described in the following letter, published in the *New York Sun*, of September 6th:

"FALCON HARBOR,
"HEAD OF BOWDOIN BAY,
"GREENLAND, August 20th, 1893.

"The Falcon arrived in this harbor on the 3d of August, after a successful though disagreeable voyage, owing to the constant succession of fog and rain. After leaving Battle Harbor, Labrador, stops were made at Hopedale and Okak, Moravian mission stations in Labrador, for dogs, twenty of which were obtained. The Falcon then bore away across Davis Strait to Holsteinborg, in southwest Greenland, where she arrived on the 26th of July. Nineteen dogs and a kayak (native man's boat) were obtained here, and after a stay of some five hours the Falcon steamed northward, reaching Godhavn, on Disco Island, on the 28th. Here twenty-one dogs, another kayak, and the fur clothing ordered last spring of the Danish Government were obtained, and after a stop of fifteen hours the ship again headed northward, arriving at Upernavik two days later.

"Only a few dogs being obtainable here a stop of only three hours was made, and, with a native pilot on board, the ship steamed to Tasuisak, about forty miles further north, the most northern white settlement on the face of the globe. Here seventeen dogs were obtained, making a grand total of eighty-four.

"The stay here was only long enough to put the dogs on board and, eight hours later, the Falcon was at Duck Islands on the southern edge of Melville Bay. Five or six hours were spent here in the effort to get a supply of ducks, but the lateness of the season and the previous visit of five whalers had so diminished the ducks and made them so wild that the effort was unsuccessful.

"Leaving the Duck Islands at 4:40 P.M. on July 31st, the Falcon steamed past the point of Cape York at 5:30 P.M. on August 1st, having made the run from Duck Islands to Cape York in twenty-four hours and fifty minutes, the quickest passage on record through Melville Bay.

"The native settlement at Cape York was visited in order to make inquiries in regard to Mr. Verhoeff [the member of Peary's last expedition, who is believed to have perished in a crevasse], but no tidings could be obtained, though I found there one of the Eskimos who had been living with me at Red Cliffe House, and who was there when the Kite left for the south in August last year, and who had been with me in the search for Verhoeff.

"Steaming northward an effort was made to find natives on Saunders Island and at North Star Bay, but without success. At Netchiloome, just at the entrance to Whale Sound, two native families were found, old acquaintances who had visited Red Cliffe House. They had neither seen nor heard anything of Verhoeff. Both these families, with all their belongings and about a ton of narwhal and walrus meat for the dogs, were taken on board and brought to the site selected for the new house, a site which I noticed a year ago as being particularly suitable for our purpose.

"The location is at the head of a little rock-bound harbor, which is itself at the head of Bowdoin Bay, and is perfectly protected from wind and storm, and gives easy access to the Inland ice. After landing the material and getting the house well started, with a few members of my party on board, we steamed to the walrus ground in Whale Sound, where twenty-four were captured in one evening, and then to the eider duck and walrus haunts in the neighborhood of Littleton Island. Here, however, only five walrus and a few ducks were obtained on account of the weather. A look was taken along the ice from Cairn Point to Cape Isabella, and so far it has been undisturbed this season.

"We then visited the site of Polar house and obtained a number of relics. We then steamed up to the bird cliffs of Hakluyt Island with the intention of obtaining birds, but a stiff southwester made this impracticable, and the ship was run into Uhlrich's Bay for reindeer. Seventeen of these were brought in in one night's hunt, and the meat and skins and the walrus were brought to the site of the house.

"All the members of the party are in the best of health and spirits, and, with the eighty-four dogs, some twenty tons of dog feed, and a dozen or more reindeer for the meat supply of the party, the prospects are extremely encouraging. It is expected that the next month's hunting will add at least fifty if not seventy-five deer to our stock, as I shall have about me in a few days six of the most trustworthy hunters of the tribe, to whom will be furnished repeating Winchesters for hunting.

"R. E. PEARY,

"Civil Engineer, U. S. N., Commanding Expedition."

Additional details are given in the following extract from a letter dated Falcon Harbour, Bowdoin Bay, Greenland, August 11, 1893, to Ex-Chief Justice Charles P. Daly, President of the American Geographical Society:

... "As you have doubtless learned from the press and perhaps other sources, the result of a happy suggestion that I should place my ship on exhibition at two or three of the principal cities has been to give me the funds which were still lacking to fit out my expedition properly. I feel that I have been extremely fortunate, and believe that I am justified in a certain amount of pardonable pride in that I have succeeded, in the short space of nine months, after returning from one expedition, in fitting out and starting upon a second. I have also been extremely fortunate thus far in the prosecution of my work. I landed here with eighty-four dogs, obtained at various points along the Labrador and Greenland coasts. We were scarcely troubled at all by the ice during our northern voyage. We have made the passage of Melville Bay, from the Duck Islands to Cape York, in nearly a direct line and in what I believe to be the shortest time on record—24 hours and 50 minutes. We have had the calmest weather since passing the Duck Islands, and I have here a perfect harbor for my ship and a perfect site for my house,

which is to be our Arctic home. I believe that the world is in sympathy with the work, and I feel that fortune will smile upon my efforts.

"Mrs. Peary joins me in best regards to you and Mrs. Daly.

"Very sincerely,

"R. E. PEARY."

Mr. Peary expects to accomplish his purpose within a year and to return with his party in the *Falcon*, in the autumn of 1894.

An unfounded and possibly malicious despatch, sent to the public press from St. Johns, Newfoundland, on the return of the *Falcon* from Greenland, gave a discouraging account of Mr. Peary's prospects. It was said that his expedition would probably be a failure, that some of his party had openly expressed their discontent, that the burros (asses) were all dead, and that Mr. Peary would not be able to provide himself with dogs, because he was not willing to pay more than a tenth part of their value.

These absurdities, or some of them, found their way to Germany, where they received unexpected hospitality and appeared as authentic news in *Petermanns Mitteilungen* (39 Band, VIII.), under the respectable name of Dr. H. Wichmann.

WOMEN MAY NOT BE FELLOWS.—At the anniversary meeting of the Royal Geographical Society, held in May last, it was settled that the question of the admission of women to membership should be submitted to the Fellows.

Voting cards were prepared and sent by post to the 3500 Fellows. Answers were returned by 1735, as follows: 1169 voted "Yes," without qualification, and 55 "Yes," subject to qualification; 466 voted "No," and 45 "No," subject to qualification.

This vote did not decide the question. A special general meeting of the Society was held on the 3d of July, at the London University, to dispose of the matter. Speeches were made pro and con, and the Hon. G. Curzon, M.P., distinguished himself by the warmth, if not by the reasonableness, of his opposition to the proposed change.

He said that ladies were out of place in scientific societies, such as the Geographical, and that the admission of women to the Anthropological Society had quite spoilt it for scientific purposes. The change was part of the general movement to break down the natural barriers between the two sexes. The steps towards the so-called emancipation of women would be not so much injurious to men as disastrous to women. The rooms of the Society were much too small to be subjected to the overcrowding of ladies. Ladies constantly formed a large proportion of the audience at their meetings, and exercised an influence—to which he had himself succumbed—over the lecturer himself. The strongest argument, however, was the scientific character of the Society, membership of which carried great weight. Men traded on the initials, "F.R.G.S.," when they were abroad, and he earnestly hoped women would not do the like.

There must have been a great number of ladies present when Mr. Curzon made these remarks.

After further discussion the question was put, with the following result: For the resolution admitting women to ordinary Fellowship, 158; against it, 172.

DID VESPUCCI MAKE A VOYAGE IN 1506?—A passage

from a despatch sent by Leonardo da Ca' Masser to the Venetian Senate from Lisbon, April 16, 1506, reads : " There are letters come from Cadiz which say that, on the 1st of March, four ships belonging to the most serene King of Castile set sail for India, towards Malacca, under the command of the Florentine, Francesco Amerigo." *

On this passage Prof. Luigi Hugues, in the *Bollettino* of the Italian Geographical Society, Serie III., Vol. vi., Fasc. v., bases an interesting argument.

He does not doubt that the Amerigo referred to is Vespucci, though the name Francesco was never borne by him. The Spanish documents, while they partly enable us to follow Vespucci for the period from 1505 to 1508, are silent with regard to him from June 5th, 1505, to the end of August, 1506, and from September, 1506, to January, 1508. It is therefore quite admissible that, between the 1st of March and the end of August, 1506, he may have performed the voyage mentioned by Leonardo Masser, for which six months would have afforded full time. It was, moreover, in the same year that Vicente Pinzon and Juan Diaz de Solis made their expedition to discover, to the westward of Cuba, the supposed strait which would open a way to Asia. There is no difficulty in admitting their return from the expedition in the interval from March 1st to August, since, in a letter to the Casa de Contratacion, under date of August 23d,† Philip the First ordered that Pinzon and Vespucci should be asked whether the ships

* Published in the *Raccolta di Documenti e Studi pel Quarto Centenario dalla Scoperta dell' America*, Parte III.—Volume I, p. 92.

† Philip died, September 25th, 1506.

intended for the discovery of the Spice Countries would be made ready before the winter ; and the two navigators must therefore have been in Spain at that time.

Pinzon and Solis had not succeeded in their search for the strait ; and there is nothing improbable in the conjecture that it was now determined to seek the solution of the problem under more southern latitudes, and especially along the coast of Brazil, which had been explored for a considerable distance by the Portuguese expeditions of 1501 and 1503, in both of which Vespucci had taken a most active part : and, in fact, these same explorers, only two years after their Central American expedition, made a voyage along the South American coast as far as 40° South Latitude, but without discovering the mouth of the mighty Rio de la Plata.

Prof. Hugues thinks that the names of the two capes, *C. Sancti Marci* and *C. Doffin de Abril*,* in Ruysch's map of 1508, are to be referred to the voyage of 1506, and that the inscription, "*Up to this point came the ships of Ferdinand, King of Spain*,"† alludes to the same expedition.

Navarrete, after mentioning the voyage of 1506, says that the King, on his return from Naples, summoned to the Court Solis, Pinzon, La Cosa and Vespucci, in order to confer with them on the subject of further explorations towards the south and along the Brazilian coast, and this seems to show that La Cosa and Vespucci had taken part in the enterprise of 1506, possibly as captains of two of the ships.

The object of the expedition—the discovery of a

* The exact form is *C. De Fundabril*.

† *Huc usque naves Ferdinandi Regis Hispaniæ pervenerunt.*

passage to the East Indies—agrees, also, with Masser's statement that Amerigo intended to reach Malacca.

FOREIGN GEOGRAPHICAL NAMES.—Prof. Dr. E. Richter, in *Petermanns Mitteilungen*, Bd. 39, v., quotes in order to correct a Hungarian writer, Mr. von Déchy, who asserts that the name of the river Theiss should always be given in its true Hungarian form, *Tisza*.

Dr. Richter maintains that the river is properly called *Theiss* by the Germans, to whom Venezia is known as *Venedig*, Napoli as *Neapel*, and Milano as *Mailand*, according to the principle adopted by every European people in spelling and pronouncing foreign names of frequent occurrence. This principle, it is held, applies with peculiar force to Hungary, on ethnographical as well as on historical grounds.

The argument does not seem to cover the whole ground. London, Paris, Madrid, Marseille, Edinburgh, Le Havre, Liverpool, Porto, are some of the names which suffer no change in Germany. The *Theiss* and the *Themse* are German forms, but the Mersey and the Tweed, the Seine and the Loire, the Tajo and the Minho keep their foreign shape. The difficulties of pronunciation can have had but little to do with producing the existing modifications. Milano is as easy for a German as for an Italian tongue, and Neapel is no improvement on Napoli.

Whatever its origin may have been, a form once established is able to hold its own against the strongest proof that it ought not to be.

APIAN'S THIRD MAP OF THE WORLD (1530) AND THE

MAP OF 1551 FALSELY ASCRIBED TO HIM.*—Prof. Dr. Hermann Wagner contributes to the *Nachrichten* of the Göttingen Academy of Sciences, No. 16, for 1892, a preliminary communication on the cartography of Apianus, and especially on the two maps named in the title.

Prof. Wagner gives, from Harrisse's *The Discovery of North America, Paris, 1892*, the following list of maps ascribed to Apianus :

1. 1520, Vienna, The *Typus orbis universalis*.
2. Ante 1522, to accompany the "Declaratio, etc." (lost).

[3. 1522, Small planisphere inserted in the work just mentioned.]

[4. 1524, Two diminutive maps in the "*Cosmographicus liber*."]]

5. Circa 1524, Described in the "*Isagoge*" (lost).

6. 1530, Ingolstadt. From his own private press.

7. 1530, Antwerp. Printed by Peter de Vales de Guldenhant.

[8. A MS. *mappa mundi* made for Charles V., formerly preserved in the Escorial (lost).]

Though Prof. Wagner hopes that traces may yet be found of the lost map of 1522, and perhaps, also, of other maps of Apian's, he recognizes only three maps of the world as genuine works of that cosmographer. These are :

Typus orbis universalis, of 1520, Vienna.

Mappa mundi, of 1522, Vienna or Ratisbon?

Tabula orbis cogniti universalior, of 1530, Ingolstadt.

* Die dritte Weltkarte Peter Apians v. J. 1530 und die Pseudo-Apianische Weltkarte von 1551, Vorläufige Mitteilung von Hermann Wagner.

The *Charta Cosmographica*, of 1544 (1551), must be rejected as not genuine. It is to be assigned to Gemma Frisius. The small maps of the *Declaratio* and the *Cosmographicus liber* do not call for further notice, and nothing is known with regard to the MS. map said to have been drawn by Apianus for Charles V. The passage in Cl. Clemens, to which HARRISSE refers, speaks as plainly as possible of an *instrument*, and not of a map:

"There is one (instrument), presented by its maker, Peter Apianus, to the Emperor Charles V., convenient for ascertaining the sites, elevations, distances and extent of places; and to explain its use he wrote four great books, some of which have been published, and some, still in MS., are kept here with the instrument itself." *

The *Typus orbis universalis* owes its preservation to the fact that it was published in two works, the Camers edition of Solinus, 1520, and the Vadianus Pomponius Mela, 1522.

The *Mappa Mundi* of 1522 is lost. Prof. Wagner thinks it may yet be found, bearing the name of its maker, "for Apianus did not hide his light under a bushel, but marked his productions with his name and title and origin." There exists but one anonymous writing of his: the *Cosmographiae Introductio*.

The *Universalior cogniti orbis Tabula* of 1530 is now in the map room of the British Museum. Prof.

* Est unum (sc. instrumentum) a P. Ap. ejus auctore oblatum Carolo V. Imp., locorum sitibus, altitudinibus, distantis et amplitudinibus explorandis commodum; ejus usui cognoscendo quatuor grandes tomos scripsit, quorum alii editi sunt in lucem, alii MSti (sc. tomi !) cum eodem instrumento hic asservantur.

Wagner gives a somewhat detailed description of this, which he calls the "third and best map of the world by Apianus," and promises to issue a copy of it with his more elaborate paper. It is on the cordiform projection. Twelve pages are devoted to an examination of the *Pseudo-Apianische Weltkarte* of 1551. The results arrived at are :

1. That Peter Apianus is in no sense the author of the *Charta Cosmographica*.
2. That this is to be assigned, not to the year 1551, but to 1544.
3. That a series of facts brings it into such close relation with Gemma Frisius that the map may be declared to be his work.

THE INLAND ICE OF EASTERN GREENLAND.—Mr. Hansen-Blangsted reports, in the *Revue de Géographie* for September, p. 230, that Lieut. Garde, of the Danish navy, has just completed an exploration of the Inland ice from the eastern side. The starting-point was the glacier of Sermilsialik in 61° N. Lat.

The distance travelled was 300 kilometres (186 miles) and the time occupied thirteen days.

The journeys were made by night, which was found to be a better time for marching over the ice.

The highest elevation was 7,000 feet, and Lieut. Garde's experience, like Mr. Peary's, showed that the glaciers along the coast offered greater difficulties than those of the interior.

Mr. Hansen-Blangsted gives expression to the patriotic hope that the Danish explorers of Greenland will not allow themselves to be anticipated by men of other nations.

JACKSON'S POLAR EXPLORATION.—Mr. F. G. Jackson left England in July for Novaia Zemlia, where he means to pass the coming winter in order to familiarize himself with arctic life and to practise the management of the sledges which he has constructed. It is his purpose to make his start for the Pole in the spring, by way of Franz Josef Land.

THE BAR OF CHARLESTON HARBOUR.—*The News and Courier*, of September 11, reviews the work done during the past year in deepening the channel across the bar at Charleston, South Carolina.

Two stone jetties have been raised to a height of from 8 to 12 feet above low water. The material used was: for the north jetty, 187,994 tons and 112,335 cubic yards of stone and 175,155 square yards of mattress; for the south jetty, 217,586 tons and 143,414 cubic yards of stone and 306,585 square yards of mattress. The dredging has amounted to 616,192 cubic yards. The results achieved are: a good 15-foot channel between the jetties all the way through at mean low tide (the tide rises six feet at Charleston) from deep water outside to deep water inside, perfectly straight and of sufficient width to be safely navigated. For a great part of the way a much greater depth has been obtained. Except for a stretch of about 2000 feet outside of the large red buoy and of another stretch of about 800 feet at the extreme outer end there are now 18 feet at mean low tide. For a distance of about one-half a mile, just where old Swash Reef used to be, with least depth of from 7 to 8 feet, there are now 21 feet or more at low water.

The jetties are capable not only of maintaining the dredged channel, but of producing enormous scour without the aid of a dredge. Over 1,000,000 cubic yards of sand have disappeared from the area between the jetties and between their axes prolonged, since 1884, of which 500,000 have passed out in the last twelve months.

The Light House Board has lighted the new channel by placing a brilliant back range high up in St. Philip's steeple, and now vessels can enter at night as well as by day by bringing Sumter light in range with St. Philip's light.

THE DISMAL SWAMP.—The Tenth Annual Report of the U. S. Geological Survey contains a paper by Prof. N. S. Shaler on the Fresh-Water Morasses of the United States, with a Description of the Dismal Swamp District of Virginia and North Carolina.

Inundated lands are divided according to their physical character into marine marshes and fresh-water swamps. The marshes are subdivided into those above mean tide—grass marshes and mangrove marshes—and those below mean tide—mud banks and eel-grass areas.

There are four subdivisions of fresh-water swamps: river swamps, divided into terrace and estuarine; lake swamps, divided into lake margins and quaking bogs; upland swamps, divided into wet woods and climbing bogs; and ablation swamps.

Prof. Shaler estimates the total area of reclaimable inundated lands in the territory of the United States, east of the Rocky Mountains, at between 105,210 and 131,200 square miles. Florida has about 30,000 square

miles, or half the area of the State; Louisiana comes next with about 15,000, the area of the State being 48,720 square miles; Mississippi and Arkansas have each about 10,000; and Michigan, the next in order, has between 6000 and 9000 square miles. These are approximate figures, based on the study of the existing maps. For the region between the Rocky Mountains and the Pacific, Prof. Shaler is disposed to think that the total area of soil which may be won from inundation by ordinary engineering devices does not exceed 10,000 square miles.

The Dismal Swamp covers about 1500 square miles in Eastern Virginia and North Carolina. Originally it was perhaps one-third greater than its present size. The Dismal Swamp canal, constructed in the last century, runs at right angles to the slope of the country and interferes with the natural drainage, the dike on the west retaining the waters in that region, so that the western section of the swamp is probably wetter than it was before the construction of the barrier, and the eastern section has become partially desiccated. Many places east of the canal might be tilled in an ordinary summer season without inconvenience from water.

About the centre of the western section is Lake Drummond, a shallow body of water, 18 or 20 miles in circumference. The local tradition is that the basin of this lake was formed by forest fires. Prof. Shaler regards it, on the contrary, as one of the peat-enclosed lakes, so common in the small morasses of the glaciated era.

The vegetation of the Dismal Swamp exhibits considerable diversity. The higher land, lying not more

than three feet above the lowest adjacent levels, is occupied by a growth of the common Southern pines. The trees in the lower levels are of three species, all tolerant of water about their roots: the *Taxodium* or bald cypress, the juniper and the black gum (*Nyssa uniflora*). The juniper grows on ground which is somewhat desiccated during the dry season; the gum and the cypress can inhabit areas which are water-covered even during the growing season; and it appears that the knees of the cypress develop only where the roots upon which they rest lie beneath the surface of the water at this time. The tallest knees seen in the Dismal Swamp are elevated not more than three feet above the roots, while those of the Mississippi Valley swamps attain twice that height.

The western border of the swamp is well-defined by a sharp elevation or escarpment, clearly an ancient sea-margin, traceable from a point north of Suffolk to the southern border of the morass, with a general trend north and south. The average difference of height between the base and the summit plain is about 20 feet; and, although its surface is more or less eroded by stream action, it is on the whole better and more continuously manifested than in any other marine bench which Prof. Shaler has seen in this country or in Europe.

The animal life of the Dismal Swamp is not of many kinds. The birds that build on the ground are generally absent, and the rodents are unknown. Bears are numerous, and two hundred are killed every year. Deer have become scarce, but there are many wild cattle, described as generally black and of small size, but

fierce and dangerous to the hunter. They feed on the tender shoots of the cane, and range in herds of from twenty to fifty. Individuals are sometimes led by offerings of salt to join the domestic herds, but it is evident that the wild cattle live entirely without salt, since the tidal rivers which penetrate to the swamp are all fresh and there are neither springs nor licks like those to which the buffalo resorted in the Mississippi Valley.

The whole of the Dismal Swamp area, with the exception of small strips near the mouths of the inlets from Albemarle Sound, may, in Prof. Shaler's opinion, be won to tillage. All the important parts of the swamp system lie well above tide-water, and the average inclination of the surface is about twenty inches per mile. The value of the land, if reclaimed and cultivated, is estimated at a very high but not unreasonable figure, considering the known fertility of the soil and the ease of access to great markets.

The district cannot be called unhealthy. A certain amount of malarial fever occurs around the margins, where the summer heat dries out a portion of the swamp area; but the central portions of the morasses at the distance of a mile from the margin seem to be fairly exempt, and the people in the interior of the swamp are less affected by fevers than those who live on the ordinary upland surface of Virginia and North Carolina.

THE LAKE MISTASSINI REGION.—Early in September the Department of Crown Lands for the Province of Quebec sent out a party to begin a thorough survey of

the country north of Lake St. John. Work will be prosecuted for about three months and then discontinued until the spring of 1894, when it will be resumed and carried on till late in the autumn. The plan is to complete the survey in three years, and to acquire definite knowledge, once for all, of a practically unexplored district.

THE SWISS LAKES.—*Petermanns Mittheilungen*, Bd. 39, No. v, prints a table by Prof. J. J. Egli, giving the area and the depth of forty-two Swiss lakes. The areas are in square kilometres, the depths in metres.

	AREA		DEPTH	
	Sq. Km.	Sq. M.	Metres	Feet
Aegeri	7	2.70	83	272
Baldegg	5.04	1.97	66	217
Bienne	42.16	16.28	78	256
Brienx	29.95	11.56	261	856
Constance*	539.14	208.17	255	837
Geneva	577.84	223.11	310	1017
Greifen	8.44	3.26	34	112
Hallwyl	10.37	4.00	48	157
Joux	9.30	3.59	34	112
Lowerz	2.84	1.10	13	43
Lucerne	113.36	43.77	214	702
Lugano	50.46	19.49	288	945
Maggiore†	214.27	82.73	365	1198
Morat	27.42	10.59	49	161
Neuchâtel	239.62	92.52	153	502
Pfäffikon	3.10	1.19	36	118

* Including the Unter See.

† Prof. Egli admits a possible greater depth south of Luino, at which point the Swiss soundings cease.

	AREA		DEPTH	
	Sq. Km.	Sq. M.	Metres	Feet
Poschiavo	1.60	.62	84	276
St. Moriz	3.15	1.22	44	144
Sarnen	7.40	2.86	52	171
Sempach	14.28	5.52	87	285
Sils	4.00	1.54	71	233
Silva Plana	2.86	1.11	77	253
Thun	47.92	18.50	217	712
Walen	23.27	8.99	151	495
Zug	38.48	14.86	198	650
Zurich*	87.78	33.90	143	469

Sixteen of the forty-two lakes have areas of less than half a square mile. These are:

	AREA	DEPTH
	Sq. Km.	Metres
Bianco	.82	47
des Brenets	.57	32
Burgäschi	.23	31
Campfer	.54	34
Davos	.55	54
Klön	1.18	33
Lungern	.86	33
Märjelen	.41	47
Mauen	.57	9
Moosseedorf	.31	22
Nero	.08	12
Oeschinen	1.14	63
Seelisberg	.18	37
Soppen	.24	28
de Taney	.17	31
Türl	.49	22

* Including the Obersee.

In the last edition of the *Encyclopædia Brit.*, Vol. XXII., p. 777, Hallwyl is credited, doubtfully, with a depth of 1522.8 feet, and the approximate depth of the Lake of Zug is put at 1321 feet.

THE CORINTH CANAL.—The opening of the canal across the Isthmus of Corinth took place on the 6th of August, in the presence of the royal family, the ministers and the diplomatic body. The king, in his discourse, gave the credit of the enterprise to the minister Zaïmis, who conceived it, and General Türr, who directed it from the beginning to the end.

The queen then cut, with a pair of gilded scissors, the white silk ribbons, which had been stretched across the canal, and the *Sphakteria* (surely, a name of ill omen !), with the royal family on board, passed in, followed by a torpedo flotilla, a Russian war-ship, four English ships, and a great number of steamers and other vessels.

The canal is just 4 miles long, 26 feet deep and 72 feet in width, and it is cut through almost solid rock, rising at the highest point to 200 feet above the sea. At the western entrance stands the town of Poseidonia and at the eastern Isthmia, near the place made famous by the celebration of the Isthmian games.

THE DEATH OF EMIN PASHA.—The following account appeared in the London *Times* of September 5th : "All doubt concerning the death of Emin Pasha now seems to be removed by the circumstantial account of his murder given to Mr. A. J. Swann. This gentleman, who for ten years, has been working on the London

Missionary Society's staff on Lake Tanganyika in Ujiji, has just reached London, accompanied by his wife, the only European lady who has ever visited that country. Speaking of Emin Pasha's death to a representative of Reuter's Agency, Mr. Swann said :—"

"As to the death of Emin there is no question; in the interior it is accepted as a fact, but some uncertainty prevails on the subject at the coast. Personally I am as certain that Emin is a dead man as I am that I am sitting here. The report of his death came to me at Ujiji in consequence of a letter which had been received there asking what should be done with Emin's effects. I at once made inquiries, and was told that he had been killed in the Manyema country by Seyd Bin Abed, and that his following of thirty Nubian soldiers had been killed and eaten. This report, which was of a most circumstantial character, reached me from four different sources in Ujiji, and to my mind is as conclusive as anything can be in Africa. It is implicitly believed by all the Arabs, who seem very well pleased to have at last got rid of Emin.

"One of my informants was an Arab who had been travelling on Emin's route. This Arab not only described Emin's journey, but, although he had probably never seen a map in his life, sketched on a piece of paper the various places touched by the explorer, and described how he had been tracked by the Arabs, who had made up their minds to kill him. Emin passed through Ruanda country and had followed one of the rivers flowing into the Congo until he came to Seyd Bin Abed's residence, where he stopped. Shortly after his arrival a number of Arabs went out and asked Emin where he was going. Emin replied, 'I am going to the coast.' Another Arab then went forward and said, 'You are Emin Pasha, who killed the Arabs at the Victoria Nyanza. I will kill you.' He then took a large curved Arab knife from his belt and, brandishing it aloft, struck off Emin's head. His body was then thrown to the Manyema, who devoured it, the Nubian followers being afterwards also killed and eaten.

"In estimating the credibility of this report," said Mr. Swann, "it must be remembered that Ujiji is the nearest spot to that where Emin had last been heard of. So much impressed was I with the account that I ordered Rumliza to get any papers or letters left by Emin, and he promised to do so. The greatest uncertainty is felt on the subject at the coast, but the fact that Emin has never been seen or heard of since he reached Ruanda speaks volumes."

In a letter to the *Times* of September 6th, Mr. Swann corrects one error, and is made the victim of another. He did not say that Mrs. Swann was the only European lady who had ever entered Ujiji, but that she was the only one who had travelled overland from Zanzibar to

Ujiji and thence across the plateau to Lake Nyassa and the *Zanzibar* River. Mr. Swann undoubtedly wrote *Zambezi*, but the *Times* has its own geography.

RUINED TEMPLES IN MASHONALAND.—Mr. R. M. W. Swan writes to the *Geographical Journal* for September, 1893, p. 263 :

"I have examined two ruined temples of the Zimbabwe period and style, situated at the confluence of the Lotsani and Limpopo Rivers in S. Latitude $22^{\circ} 39' 42''$, E. Longitude $28^{\circ} 16' 30''$. The temples show the same system of orientation and geometrical construction as the great temple at Zimbabwe. I cleared the bush from the more perfect of the two temples on the Lotsani, and made a careful measurement of many of the radii of the one curve of which it consists. I oriented directly from the centre of the curve and saw the sun from that point setting just to the left of the middle of the main doorway. On correcting the position of the sun for its decrease in declination during the seventeen days which had elapsed since the solstice, I found that it would set at the solstice exactly in a line with the centre of the arc and the middle of the doorway. This direct measurement and observation should remove any doubt as to the applicability of our theory of the construction of the plans of these temples."

GEOGRAPHY AT THE MEETING OF THE BRITISH ASSOCIATION.—The British Association for the Advancement of Science met at Nottingham, September 13. Sir Archibald Geikie, the retiring President, formally introduced his successor, Dr. Burdon Sanderson, whose address was on the subject of Biology, the origin and first use of the term, and the relations between that and other branches of natural science.

The London *Times* reports at length the address of Mr. Henry Seebohm, Sec. R.G.S., F.L.S., F.Z.S., who presided over the Section of Geography.

He chose for his subject the Polar Basin, of which he said that "the relative distribution of land and water and the geographical distribution of light and heat in

the Arctic region is absolutely unique. In no other part of the world is a similar climate to be found."

He estimated the unexplored regions of the Basin at 1,000,000 square miles and briefly reviewed the work of exploration already accomplished by Peary and Nansen, and gave a sketch of the enterprises in which they are now engaged. Nansen hopes that the current which carried the *Jeannette* from Herald Island, north of Behring Strait, in a north-westerly direction for 500 or 600 miles is the same current that flows down the east coast of Greenland, and he bases his hopes upon three facts. First, that many articles from the wreck of the *Jeannette* were found on an ice floe off the South coast of Greenland three years afterwards; secondly, that a harpoon-thrower of a pattern unknown except in Alaska was picked up on the south-west coast of Greenland; and thirdly, that drift-wood supposed to be of Siberian origin is stranded regularly in considerable quantity on the coasts of Greenland. The Norwegian at Hammerfest, about latitude 70 deg., is dependent for his firewood upon the Gulf Stream, which brings him an ample supply from the Gulf of Mexico, whilst the Eskimo, on the Greenland coast, in the same latitude, trusts to a current from the opposite direction to bring him his necessary store of wood from the Siberian forests.

By no means the least important physical feature of the Polar Basin is its gigantic river systems. The rivers which flow into the Arctic Ocean are some of them amongst the greatest in the world. Some idea of the relative sizes of the drainage areas of a few of the best known rivers may be learnt from the following, in which the Thames, with a drainage area of 6,000 square miles, is the unit:—9 Thames equal 1 Elbe (54,000); 2 Elbes equal 1 Pechora (108,000); 2½ Pechoras equal 1 Danube (270,000); 2 Danubes equal 1 Mackenzie (540,000); 2 Mackenzies equal 1 Yenisei (1,080,000); 2 Yeniseis equal 1 Amazon (2,160,000). There is nothing that makes a greater impression upon the Arctic traveller than the enormous width of the rivers. The Pechora is only a river of the fifth magnitude, but it is more than a mile wide for several hundred miles of its course. The Yenisei is more than three miles wide for at least a thousand miles and a mile wide for nearly another thousand. Whymper describes the Yukon as varying from one to four miles in width for three or four hundred miles of its length. The Mackenzie is described as averaging a mile in width for more than a thousand miles, with occasional expansions for long distances to twice that size. If we assume that the unknown regions are principally sea, then the Polar Basin, including the area drained by all rivers flowing into the Arctic Sea, may be roughly estimated to contain about 14,000,000 square miles, of which half is land and half water. In the coldest part of the basin the land is either glacier or tundra, and in the warmer parts it is either forest or steppe. Greenland, the home of the glacier and the mother of the icebergs of the Northern Atlantic, rises 9,000 or 10,000 feet above sea level, whilst the sea between that lofty plateau and Scandinavia is the deepest known in the Polar Basin, though it is separated from the rest of the Atlantic by a broad belt or submarine plateau connecting Greenland across Iceland and the Faroes with the British Islands and Europe. Iceland, Spitzbergen, and

Novaya-Zemlia, the latter a continuation of the Urals, are all mountainous and full of glaciers. The glaciers of Southern Alaska are some of the largest in the world.

The Arctic Sea, which lies at the bottom of the Polar Basin, is fringed with a belt of bare country, sometimes steep and rocky, abruptly descending in more or less abrupt cliffs and piles of precipices to the sea, but more often sloping gently down in mud banks and sand hills representing the accumulated spoils of countless ages of annual floods, which tear up the banks of the rivers and deposit shoals of detritus at their mouths, compelling them to make deltas in their efforts to force a passage to the sea. In Norway this belt of bare country is called the Fjeld, in Russia it is known as the Tundra, and in America its technical name is the Barren Grounds. In the language of science it is the country beyond the limit of forest growth. In exposed situations, especially in the higher latitudes, the tundra does really merit its American name of Barren Ground, being little less than gravel beds interspersed with bare patches of peat or clay, and with scarcely a rush or a sedge to break the monotony. In Siberia at least this is very exceptional. By far the greater part of the tundra, both east and west of the Ural Mountains, is a gently undulating plain, full of lakes, rivers, swamps, and bogs. The lakes are diversified with patches of green water plants, amongst which ducks and swans float and dive; the little rivers flow between banks of rush and sedge; the swamps are masses of tall rushes and sedges of various species, where phalaropes and ruffs breed, and the bogs are brilliant with the white fluffy seeds of the cotton grass. The groundwork of all this variegated scenery is more beautiful and varied still—lichens and moss of almost every conceivable colour, from the cream coloured reindeer moss to the scarlet-cupped trumpet moss, interspersed with a brilliant alpine flora, gentians, anemones, saxifrages, and hundreds of plants, each a picture in itself, the tall aconites, both the blue and yellow species, the beautiful cloud-berry, with its gay white blossom and amber fruit, the fragrant *Ledum palustre* and the delicate pink *Andromeda polifolia*. In the sheltered valleys and deep water-courses a few stunted birches, and sometimes large patches of willow scrub, survive the long severe winter, and serve as cover for willow grouse or ptarmigan. The Lapland bunting and red-throated pipit are everywhere to be seen, and certain favoured places are the breeding grounds of snipe, plover, and sandpipers of many species. So far from meriting the name of barren ground, the tundra is for the most part a veritable paradise in summer. But it has one almost fatal drawback, it swarms with millions of mosquitoes. The tundra melts away insensibly into the forest, but isolated trees are rare, and in Siberia there is an absence of young wood on the confines of the tundra. The limit of forest growth appears to be retiring southward, if we may judge from the number of dead and dying stumps; but this may be a temporary or local variation caused by exceptionally severe winters. There are no trees on Novaya-Zemlia. Two or three species of willow grow there, but they are dwarfs, seldom attaining a height of 3 in. Novaya-Zemlia enjoys a comparatively mild winter, the mean temperature of January, thanks to the influence of the Gulf Stream, being 15 deg. Fahr. above zero in the south, and only 5 deg. Fahr. below zero in the north. The absence of trees is due

to the cold summers, the mean temperature of July not reaching higher than 45 deg. Fahr. in the south, whilst in the north it only reaches 38 deg. Fahr. After some observations on the steppe regions and on the anthropology of the Polar Basin, Mr. Seebohm expressed his opinion that life areas, or zoo-geographical regions, are more or less fanciful generalizations. Animals recognize facts, and are governed by them in the extension of their ranges; they care little or nothing about generalizations. The mean temperature of a province is a matter of indifference to some plants and to most animals. The facts which govern their distribution are various, and vary according to the needs of the plant or animal concerned. To a migratory bird the mean annual temperature is a matter of supreme indifference. To a resident bird the question is equally beside the mark. It is very important, however, to remember that it is actual temperature that governs them, not isotherms corrected to sea level.

After remarking on the eccentricity of isothermal lines in the Polar Basin, the President described the intimate relations which subsist between geography and geology. A knowledge of geography, he said, is absolutely essential to the geologist. To discriminate between one kind of rock and another is a comparatively small part of the work of the geologist. To ascertain the geographical distribution of the various rocks is a study of profound interest. If the geologist owes much to the geographer the latter is also largely indebted to the labours of the former. The geology of a mountain range or an extended plain is as important to the physical geographer as the knowledge of anatomy is to the figure painter. The geology of the Polar Basin is not very accurately known, and the subject is one too vast to be more than mentioned on an occasion like the present; but the evidences of a comparatively recent ice age in Eastern America and Western Europe are too important to be passed over without a word. In the sub-Arctic regions of the world there is much evidence to show that the climate has in comparatively recent times been Arctic. The present glaciers of Central Europe were once much greater than they are now, and even in the British Islands glaciers existed during what has been called the ice age, and the evidence of their existence in the form of rocks, upon which they have left their scratches and heaps of stones, which they have deposited in their retreat, are so obvious that he who runs may read. Similar evidence of an ice age is found in North America, and to a limited extent in the Himalayas, but in the alluvial plains of Siberia and North Alaska, as might be expected, no trace of an ice age can be found. The extreme views of the early advocates of the theory of an ice age have been to a large extent abandoned. No one now believes in the former existence of a Polar ice cap, and possibly when the irresistible force of ice-dammed rivers has been fully realized, the estimated area of glaciation may be considerably reduced. The so-called great ice age may have been a great snow age with local centres of glaciation on the higher grounds.

Mr. Seebohm then gave a graphic description, largely drawn from personal experience, of the succession of the seasons in these high latitudes. He said the stealthy approach of winter on the confines of the Polar Basin is in strong contrast to the catastrophe which accompanies the sudden onrush of summer. One by one the flowers fade and go to seed, if they have been fortunate enough to attract by

their brilliancy a bee or other suitable pollen-bearing visitor. The birds gradually collect into flocks, and prepare to wing their way to southern climes. Strange to say it is the young birds of each species that set the example. They are not many weeks old. They have no personal experience of migration, but Nature has endowed them with an inherited impulse to leave the land of their birth before their parents. Probably they inherit the impulse to migrate without inheriting any knowledge of where their winter quarters are to be found, and by what route they are to be sought. The date upon which winter resumes his sway varies greatly in different localities, and probably the margin between an early and a late season is considerable. In 1876 Captain Wiggins was frozen up in winter quarters on the Yenisei in latitude $66\frac{1}{2}^{\circ}$ on October 17th. In 1878 Captain Palander was frozen up on the coast 120 miles west of Behring Strait, in latitude $67\frac{1}{2}^{\circ}$, on September 28th. The arrival of summer in the Arctic regions happens so late that the inexperienced traveller may be excused for sometimes doubting whether it really is coming at all. When continuous night has become continuous day without any perceptible approach to spring an Alpine traveller naturally asks whether he has not reached the limit of perpetual snow. It is true that here and there a few bare patches are to be found on the steepest slopes, where most of the snow had been blown away by the wind, especially if these slopes face the south, where even an Arctic sun has more potency than it has elsewhere. It is also true that small flocks of little birds—at first snow-buntings and mealy redpolls, and later shore larks and Lapland buntings—may be observed to flit from one of these bare places to another, looking for seeds or some other kind of food, but after all evidently finding most of it in the droppings of the peasants' horses on the hard snow-covered roads. The appearance of these little birds does not, however, give the same confidence in the eventual coming of summer to the Arctic naturalist as the arrival of the swallow or the cuckoo does to his brethren in sub-Arctic and sub-tropic climates. The four little birds just mentioned are only gipsy migrants that are perpetually flitting to and fro on the confines of the frost, continually being driven south by snow-storms, but ever ready to take advantage of the slightest thaw to press northwards again to their favorite Arctic home. They are all circumpolar in their distributions, are as common in Siberia as in Lapland, and range across Canada to Alaska as well as to Greenland. In sub-Arctic climates we only see them in winter, so that their appearance does not in the least degree suggest the arrival of summer to the traveller from the south. The gradual rise in the level of the river inspires no more confidence in the final melting away of the snow and the disruption of the ice which supports it. In Siberia the rivers are so enormous that a rise of five feet or six feet is scarcely perceptible. The Yenisei is three miles wide at the Arctic Circle, and as fast as it rises the open water at the margin freezes up again, and is soon covered with the drifting snow. During the summer which I spent in the valley of the Yenisei we had six feet of snow on the ground until the 1st of June. To all intents and purposes it was mid-winter, illuminated for the nonce with what amounted to continuous daylight. The light was a little duller at midnight, but not so much so as during the occasional snowstorms that swept through the forest and drifted up the broad river bed. During the month of May there were a few

signs of the possibility of some mitigation of the rigours of winter. Now and then there was a little rain, but it was always followed by frost. If it thawed one day it froze the next, and little or no impression was made on the snow. The most tangible sign of coming summer was an increase in the number of birds, but they were nearly all forest birds, which could enjoy the sunshine in the pines and birches, and which were by no means dependent on the melting away of the snow for their supply of food. Between May 16th and 30th we had more definite evidence of our being within bird flight of bare grass or open water. Migratory flocks of wild geese passed over our winter quarters, but if they were flying north one day they were flying south the next, proving beyond all doubt that their migration was premature. The geese evidently agreed with us that it ought to be summer, but it was as clear to the geese as to us that it really was winter. We afterwards learnt that during the last ten days of May a tremendous battle had been raging 600 miles as the crow flies to the southward of our position on the Arctic Circle. Summer in league with the sun had been fighting winter and the north wind all along the line, and had been as hopelessly beaten everywhere as we were witnesses that it had been in our part of the river. At length, when the final victory of summer looked the most hopeless, a change was made in the command of the forces. Summer entered into an alliance with the south wind. The sun retired in dudgeon to his tent behind the clouds, mists obscured the landscape, a soft south wind played gently on the snow, which melted under its all-powerful influence like butter upon hot toast, the tide of battle was suddenly turned, the armies of winter soon vanished into thin water and beat a hasty retreat towards the Pole. The effect on the great river was magical. Its thick armour of ice cracked with a loud noise like the rattling of thunder, every twenty-four hours it was lifted up a fathom above its former level, broken up, first into ice floes and then into pack ice, and marched down stream at least a hundred miles. Even at this great speed it was more than a fortnight before the last straggling ice-blocks passed our post of observation on the Arctic Circle, but during that time the river had risen seventy feet above its winter level, although it was three miles wide, and we were in the middle of a blazing hot summer, picking flowers of a hundred different kinds, and feasting upon wild ducks' eggs of various species. Birds abounded to an incredible extent. Between May 29th and June 18th I identified sixty-four species which I had not seen before the break-up of the ice. Some of them stopped to breed and already had eggs, but many of them followed the retreating ice to the tundra, and we saw them no more until, many weeks afterwards, we had sailed down the river beyond the limit of forest growth. The victory of the south wind was absolute, but not entirely uninterrupted. Occasionally the winter made a desperate stand against the sudden onrush of summer. The north wind rallied its beaten forces for days together, the clouds and the rain were driven back, and the half-melted snow frozen on the surface. But it was too late; there were many large patches of dark ground which rapidly absorbed the sun's heat; the snow melted under the frozen crust, and its final collapse was as rapid as it was complete.

It is not always easy to interest an audience in the

Polar Basin, and Mr. Seebohm's address fully deserved the vote of thanks with which it was received. The phenomena which mark the coming and the triumph of the Northern summer are well described, but Mr. Seebohm's battlepiece is only an amplification of Thomson's, and, with all its effectiveness, the Hudibrastic simile of the buttered toast owes its inspiration perhaps too directly to the famous couplet :

And, like a lobster boiled, the morn
From black to red began to turn.

Papers were read—by Mr. Guy Boothby, describing his journey across Australia from north to south ; by Mrs. Lilly Grove, F.R.G.S., on her visit to Chiloe and the neighboring islands ; and by Mr. Herbert Ward, on Environment in Relation to the Native Tribes of the Congo Basin.

At a combined meeting of Sections C. and E. to discuss the limits between Geology and Geography, the first paper was read by Mr. Clements R. Markham, F.R.S., who, in considering the boundary-line between geology and physical geography, approached the subject as a geographer. From a central geographical position the limits of their science might be defined, distinguishing between the subjects which were within their boundary and those which, although clearly belonging to another division of knowledge, were still pertinent to their inquiries. The first work of geographers was to measure all parts of the earth and sea and to fix the relative positions of all places on the earth's surface. They first established the locality, and then studied the phenomena within a given area and the changes which had taken place during historical times—the changes respecting which there was human testimony in some shape or form, not necessarily written testimony. These changes generally explained to us the laws according to which similar changes were now taking place around us. This was physical geography. From the point of view of its connexion with physical geography he took geology to be a study of the condition of the earth and of the changes that had taken place on its surface during the cycles of ages previous to the dawn of history. Sir Roderick Murchison used to say that the geologist was the physical geographer of former periods. When he studied the phenomena of physical geography it was to collect *data* which would enable him to solve some problem of remote ages. The geologist and the geographer used the same materials, but for different purposes—the former to find interpretations of problems relating to the past, the lat-

ter to explain what was actually taking place in the present. The physical geographer certainly had to learn from geology the influence that the nature of the various rocks and their present positions had had, and still had, on the features of the earth's surface as we now saw them. For instance, the causes which decided the direction of river-beds could generally be ascertained by a study of the nature of the rocks and of their inclinations round the fountains and along the river courses. But the objects of such study were different from those of the geologist; and no geological facts or arguments came within the sphere of the geographer's work unless they helped to explain an existing geographical feature. The aid derived by the closely allied sciences from each other did not interfere with the enunciation of a distinct limit between them. He believed this boundary-line was to be found where human testimony ceased. Geography fixed localities. It found certain physical phenomena peculiar to each locality, and it sought for their causes. In such research the two sciences of geology and geography were on common ground; but while the object of the former was to obtain explanations of phenomena in the remote past, that of the latter was to seek reasons, from the testimony of history, for the condition of the locality as the geographer saw it before him. In order to test the application of a canon intended to define the boundary line of the two sciences, it would be well to select some given area for the purpose. The great valleys of the Ganges and the Indus would be suitable. If we went back to the earliest human records, we should find that the inhabitable part was confined to the water-parting between the Jumna and the Sutlej. All the rest of the present valley of the Ganges was an arm of the sea. The vast region between Delhi and Calcutta had become habitable within the historical period. As dynasty succeeded dynasty, we found the foundation of cities recorded in situations lower and lower down the valley. The physical geographer compared the records of history with what he could now see with his own eyes. The process that was going on was described by Mr. H. F. Blanford. Standing on the banks of the Ganges, and watching the turbid flood swirling past, the observer saw the *chur* opposite, which the river left dry when its waters fell at the close of the last rainy season. Until lately it was covered by a rich green crop of indigo. It was now more than half cut away and buried beneath the waters. Huge masses detached themselves from time to time and were swallowed up by the deep, muddy stream. These were present facts. The inquirer then learnt that half a century ago the river itself was only a moderate-sized *khall*, and that an old channel, seven or eight miles off, and now little more than a string of pools, was at that time a great river. Turning to history, he would find that the ancient records of the people gradually unfolded the causes and effects of what he had seen and heard. The positions of the capitals of the different dynasties which successively reigned in the valley plainly continued the story, until the Vedas were reached. Then the whole wonderful record was unfolded through the help of human testimony. If we came nearer home we saw how the remarkable phenomena connected with the long battle between the land and the sea at the delta of the Rhine taught another memorable lesson in physical geography, with the aid of history. We saw what was going on now; the dunes protecting Holland from

destruction, the Zuyder Zee, the numerous islands, and the tracts of reclaimed land. Human testimony explained the causes which produced the present condition of this region, and the gradual changes in the course of centuries. The slow movement of the dunes was revealed to us by the statue and temple of Nehelennia, which was uncovered some years ago on the Domburg Sands. A drive of 12 miles northward from Bruges conducted the inquirer to the little country town of Sluys, which was surrounded as far as the eye could reach with cornfields and meadows, and clumps of tall trees. The student of Froissart read how our King Edward III. gained a great naval victory over the French fleet on this very spot. If he continued his researches and studied the histories of the great struggle between the United Provinces and Philip II. of Spain, he would find that a change had slowly but surely been taking place. Sluys was still a port, but with very different surroundings from the Sluys of the 14th century. From that time he might trace its story, with the aid of a succession of maps, down to the present day. This was physical geography, explained and illustrated by the aid of history. The earlier record of the same region when the mouth of the Rhine was somewhere in the latitude of the Orkneys, and the river-drift men tenanted what was then a part of a continent, but was now the island of Britain, as distinctly belonged to geology. The interesting facts connected with it were not ascertained by human testimony, but by other methods and for other objects. Here again we found a natural boundary-line between geology and geography, by means of which the whole body of facts relating to a locality could be logically divided between the two sciences, and conveniently classified. It was thus that physical geography found most efficient assistance from human testimony, for the study of the former condition of parts of the earth's surface at different epochs. It need not always be written testimony. The splendid temples of Selinunte on the south coast of Sicily, and the direction in which they had been thrown down, were the silent witnesses to a great earthquake in the eighth century. We had seen, too, how the statue of the goddess Nehelennia explained the direction and rate of movement of the sand-dunes of Zeeland. It was this testimony respecting the condition of the earth's surface at long intervals of time, which gave such importance to the editing and the study of old voyages and travels. Hence, every physical geographer ought to be a member of the Hakluyt Society. By careful reading, and by knowing what he wanted, he would pick many a plum out of the heaviest pudding. But, in truth, the quaint old narrators of voyages and travels were very rarely dull. The student of physical geography was sure to be rewarded by their perusal. He might be giving his attention to the formation of coral islands, and perhaps meditating on the question whether Bermuda once formed a great circle enclosing a lagoon. The existing evidence was the small west rock on the western reef gradually being reduced in size by the action of the waves. Further evidence of the dimensions of this rock in former times would be important. A man named Henry May went out as a mate with Lancaster in his first voyage to the East Indies, three centuries ago. May lost his ship somewhere near Puerto Rico on his return voyage, and took a passage home in a French vessel. He was shipwrecked on the western reef of Bermuda, and his journal supplied evidence respecting that west rock. He de-

scribed that land as consisting in his time of "high cliffs." Further research might reveal its dimensions at some other period, and so help the researches of geographers; for the narrative of Bermudez, the discoverer of this coral group, was still buried in Spanish archives. When the explorer made new discoveries, their true significance could only be established by the testimony of history. The region round Lake Zuwaya to the south of Abyssinia was almost unknown, and was consequently very interesting to geographers. It was unvisited for centuries, and Mr. Ravenstein, our greatest authority on Africa, had to go back to the enterprises of the Portuguese to find any traces of it. Thus it was that we appreciated the value of the narrative of Father Alvarez, who accompanied the embassy of Rodrigo da Lima to Prester John; for one of the members of this embassy, in a journey to the southward of Abyssinia, described the lake, which had again been revealed to us by modern travellers after an interval of three centuries. Earthquakes composed another series of phenomena which belong to geology or geography, as they occurred before or after the dawn of human testimony. Seismology was a department of geography, and the record of earthquake phenomena could only be completed by researches into the history of the past. The colonial records, in the Spanish archives, thus enabled us to form a descriptive list of the earthquake phenomena on the western coast of South America, for the last three centuries; and similar chronological series could be gathered from historical documents, as regarded several other parts of the world. In all these departments the line between geology and geography could be defined without strain or danger of confusion; and the result of the consideration of the question of limits, from this point of view, seemed to be that it could be settled naturally and without undue concession on either side. The two sciences depended upon each other and were very closely allied. The geologist found the same phenomena in the rock formations of the past as the physical geographer discovered on the surface of the earth of the present. Both, for example, had the duty laid upon them of seeking out the agencies which rule in the processes of upheaval and depression. The fold, with its crest and trough, was common to both sciences; and geographers had rejoiced at the announcement of "a wedding-ring of geology and geography uniting them at once and forever in indissoluble union."

Mr. W. Topley, F.R.S., of the Geological Survey of England and Wales, approached the question from the geological standpoint. He admitted that physical geography is to a large extent the foundation of geology, inasmuch as a geologist must study processes now in action before he can understand the manner in which rocks, now forming the earth's surface, have been formed. On the other hand, the existing surface features of the earth can only properly be understood when viewed in relation to their geological structure. From this point of view geology is the foundation of physical geography. The range, shape, and character of these surface features are determined by the nature of the rocks and by the manner in which these rocks are arranged. Familiar illustrations of this point are afforded by the escarpments and valleys of England and France. It is equally apparent in the more complicated structure of mountains. The rocks of mountain ranges and their flanking hills are often contorted and inverted, so that the apparent succession

is not the real one; but even here the surface features are equally controlled by the manner in which the rocks now lie. The existing surface of the land is almost entirely due to denudation; the manner in which this acts and the results developed vary with the nature and "lie" of the rocks. The soils of a district have mostly been produced by the weathering of rocks, etc., at the surface. The soil and the facility for obtaining water have determined the original settlement of any area. The land divisions consequent on such early settlement have been equally determined, in many parts, by geological structure.

The discussion was opened by Mr. Ravenstein, who combated the notion that physical geography was a new department of geology. Physical geography and geology stood to each other in a similar relation to that which existed between history and political geography. The physical geographer should concern himself with the composition and physical character of the rock and leave its history and development and age to the geologist.

Prof. Lapworth, of Birmingham, thought the two sciences shaded imperceptibly into each other. The stratigraphical geologist was indebted at every turn to his friend the physical geographer, and it was impossible clearly to define where the work of the one began and that of the other ended.

Prof. Valentine Ball, of Dublin, spoke in strong terms of condemnation of bad maps, and said that geographical students ought to study geology, which was the anatomy of the earth.

Dr. R. D. Roberts defined geology as the veracious history of the earth, which, if it could be told in detail, would explain the evolution of the earth from the physical geography of the past to that of the present.

Mr. Yale Oldham, University lecturer in geography at Cambridge, preferred to recognize physical geography as one of the branches of the great science of geography, which had also its historical, economic, and other aspects. The same sub-division of science which was so discernible in what was now called biology was at work in the two sciences of geology and geography.

The Rev. Prof. Bonney said that to try to make out the limits of geology and geography was very like trying to define the boundaries of a river which flowed into the sea and the sea itself. The real distinction was sufficiently indicated in the words themselves; one was earth description, and partook of the nature of an art. Geology, on the other hand—"Earth reason"—was rather a science than an art.

Col. Godwin-Austen was at a loss to understand how Mr. Markham's historical canon of the distinction between geography and geology could apply to two such countries as Australia and Egypt, the length of whose historical records was so widely different.

Sir A. Geikie spoke as having one foot in each of the two sciences. It was desirable that some line of cleavage should be drawn, though he hardly thought Mr. Markham's suggestion would find general acceptance. Geography might be regarded as the history of the earth; but the objection to Mr. Markham's theory was that discoveries might from time to time remove a series of phenomena from geology to geography.

Mr. W. M. Conway recounted his experiences in the Karakoram Mountains. Kashmir, he said, was very different from the idyllic land described by poets. It might be called a crumpled Sahara, with rocks and precipitous slopes, naked and without moisture or shade, and, in short, an *impossible* wilderness; which appears to be something that defies geology and geography, as well as language. A letter just received from a British officer stationed at Gilgit gave an account of a flood which began on July 7th and in five days wrought a geological revolution. The peaks of the Karakoram Mountains range from 20,000 to 28,000 feet in height.

They are very unlike the Alps, and are mostly in the form of towers of remarkable sharpness.

The still unsettled question of the theory of coral formations was discussed by the Geological and Biological Sections.

Professor W. Sollas opened the discussion by giving an historical account of the various hypotheses which had been advanced to account for the phenomena connected with coral reefs and atolls. He concluded by contending that Darwin's theory that the reefs were a later stage of barrier reefs erected on subsiding land was the true one. This theory was one of great simplicity and beauty, and one which accounted for all the facts which geology presented. The opposition which Agassiz offered to the theory was founded mainly on his study of the coral reefs of the Florida coast; but these reefs had been studied by Darwin, who came to the same conclusion as Agassiz as to those particular reefs. The great weakness of Darwin's case at the time of its enunciation was the absence of fossil reefs comparable with atolls, and this was pointed out by Charles M'Laren many years ago. Darwin, however, believed that such reefs would ultimately be found, and his expectation had been abundantly verified. In England there were only small remains of the kind, but in the Tyrol the Langkofen had a thickness of limestone to be identified with coral of over 3,000 feet.

Dr. Hickson quite agreed with Professor Sollas in thinking that Darwin's hypothesis was both simple and beautiful, but that was about the only point on which they agreed. Some few atolls, or groups of atolls, such as, for instance, the Fiji Archipelago, might possibly have been formed during subsidence, but the vast majority of atolls and barrier reefs could not be formed in that manner. The evidence was quite conclusive that many atolls occurred in regions where elevation

had recently taken place, and was probably occurring now. Several points mentioned in Professor Sollas's address were not in accordance with recent observation. He hoped that, as a result of this discussion, some further investigations would be made on the rapidity and direction of the growth of coral reefs at the present day.

Dr. A. Rothpletz (of Munich), having a personal acquaintance with the region of the "dolomites," said some of the sections shown were not correct. In one case what was shown as overcast strata lying upon the dolomite was in reality below it. Moreover, great masses of rock within the area of the "dolomites," and which were usually called "Schlerndolomit," were not dolomite but limestone. The fossils contained in those were at present being worked out, and they included a large number of ammonites, bivalves, algæ, etc. Corals were not wanting even in the dolomite.

Mr. Gilbert Bourne said that it had been stated that reef-building corals flourished best where the breakers were heaviest on the edge of the reef. His own experience was that at these points only a few true corals grow and that the gardens of corals described by Professor Sollas were only to be found in quieter spots, where the corals were sheltered from the force of the breakers but bathed by a gentle and uniform current. Photographs of luxuriant coral beds bore out this assertion. Nor did he agree with the statement that the rock of which atolls were composed was formed by masses of corals flung over the edge of the reef by the waves. Dr. Guppy had shown that the large masses torn off at the edge of the reef tended rather to roll down the seaward face of the reef and to form a talus slope. It had been said that soundings of lagoons showed a filling up and shallowing of the lagoon. On what evidence did this assertion rest? Probably no atoll had been so thoroughly surveyed as the one with which the speaker was personally acquainted—the atoll of Diego Garcia. It was surveyed by the French at the end of the last century, by Captain Moresby in 1837, and nearly 50 years later by her Majesty's ship *Rambler*—in 1885. He had very carefully compared the soundings made by Captain Moresby with those made by the *Rambler*, and found that in nearly every case the soundings were almost identical, with the exception of a few channels in which, on the whole, the *Rambler* soundings showed greater depths. It must be remembered that the old soundings made with a hemp line were not always trustworthy and that they commonly gave rather greater depths than the soundings made with wire.

After referring to Semper's observations in the Pelew Islands, in which atolls, barrier-reefs, fringing-reefs, and recent elevated coral reefs were found in the same area, he said the information just given by Professor Rothpletz fully bore out the assertions made by Murray and Agassiz, that the upward growth of submarine banks was largely due not to coral growth, but to the accumulation of the calcareous skeletons of molluscs and echinoderms on those banks, while Professor Sollas had revived the old theories of a Lemuria and an Atlantis—theories which most people held to be long ago exploded—and had dwelt on the existence of coral islands in the Indian Ocean as evidence of a previously existing continent stretching from Africa and Madagascar to Ceylon and India. He had given no explana-

tion of the fact that the tropical regions of the Atlantic Ocean, across which the old Atlantis was supposed to have stretched, are almost entirely destitute of coral formations.

Professor Bonney replied to Dr. Hickson's criticism on the relation of a reef to the island within, that a general correspondence was all that could be expected. He thought that at present the Tyrol dolomites must be carried to a suspense account, though certainly corals were a constituent. But he asked was there any evidence that a growing reef was found deeper than about 25 fathoms, for that was a point of first importance.

Sir H. Howorth, M.P., limited himself to the question of whether coral reefs are now growing in districts of upheaval or subsidence. The Pacific consists of two regions. One, the North Pacific, containing the Sandwich Archipelago, and the other consisting of the rest of the scattered islands of the Pacific, which are nearly all coral islands, while the former possesses a very peculiar fauna and flora containing a great many endemic species, pointing to its being a very old land surface which has subsided and been broken up into an archipelago. The other islands east of the Solomon Islands are occupied by accidental plants and animals, waifs and strays, which point to their having very recently risen from the sea, and therefore being *à priori* situated in an area of elevation. This is confirmed where we have positive evidence of the actual change of level going on at this moment where the corals are growing. We have such evidence in the case of the Philippines, Java, the Australian reef, the Fiji Islands, etc. We have sea beaches and other evidences of quite recent, if not current, elevation. A third class of evidence is the occurrence of solid and consolidated strata of coralline origin in such places as Florida, the Bahamas, Guadeloupe, and in many localities in the Pacific where coral reefs are still growing, which can only be explained by the areas in which they occur being areas of upheaval.

Rev. T. R. R. Stebbing observed that, as Darwin himself admitted, coral reefs might be begun in either one area or the other, but that the favorable situation was found to be in areas of subsidence. In answer to the inference drawn from the consensus of recent observers who were opposed to Darwin's theory, Mr. Stebbing called attention to the fine work on "The Great Barrier Reef of Australia," by Mr. Saville-Kent, that author entirely endorsing Darwin's view, as a result of his long-continued explorations in Queensland.

Mr. H. O. Forbes made some remarks on his observations in the Keeling Islands in the Indian Ocean. He pointed out that he had observed undoubted evidence of elevation both between two of the islets of the lagoon and in the construction of Horsburgh Island, the largest member of the group.

Professor Sollas, in reply, said his enlightenment had been of a different nature to that which he had anticipated, for the objections of most of the speakers were so easily met that his last lingering doubts as to the efficacy of Darwin's hypothesis had been wholly dispelled. He had been asked by Dr. Hickson for an instance of a reef with a steep seaward slope, and in reply he instanced the soundings recently made by Admiral Chambeyron on the reef of New Caledonia, when 600 metres from the edge the slope was found to vary from 51° to nearly 90° .

That the limestones of the Tyrol were not wholly dolomitic was well known, but they were usually structureless, and the rapid disappearance of structure from the coral growths of existing reefs is a familiar fact. That overcast bedding should occur below reef limestone was compatible with the mode of reef growths, but Dr. Rothpletz admitted that, if the limestones of the Tyrol were not coral reefs, those of the Eastern Alps are, and as these are sometimes 400 fathoms in thickness they fully supported Darwin's case. As regards Mr. Bourne's observations on the filling up of lagoons, Professor Sollas cited the instance of Elizabeth Reef, in the Coral Sea, where, in 1820, Captain King found a deep lagoon. It did not need wire sounding-lines to ascertain this, and in 1877 the greater part of this lagoon was found to be filled up to about one-and-a-half fathom. Lemuria and Atlantis he did not revive. The tract of land which Neumayer had mapped as existing across the Indian Ocean in Jurassic times was not Lemuria, and its existence was supported by the observations of most of the geologists on the Indian Survey, including its director, Mr. Oldham. In the Pelew Islands there did exist raised reefs, but these were on the margins of a recently sunken area. None of the opponents of Darwin's view had raised any objections which, when examined in detail, did not rather sustain than damage it.

WASHINGTON LETTER.

WASHINGTON, September 25, 1893.

NEW GEOGRAPHY.—The recently published report on the population and resources of Alaska at the eleventh census—a 4to volume of 293 pages and 75 plates—must be regarded as the latest reliable geographical and statistical account of this interesting domain. Under seven sub-divisions, known respectively as the Southeastern, the Kadiak, the Unalaska, the Nushagak, the Kuskokwim, the Yukon, and the Arctic districts, apportioned among several investigators, viz.: Miner W. Bruce, Eliza R. Scidmore, Henry Boursin, Samuel Applegate, Alfred B. Schanz, William C. Greenfield and Henry D. Woolfe, the descriptions of the tribes and their districts, geography and topography, manners and customs, superstitions and ceremonies, diseases, dwellings, food supplies, etc., are treated from the standpoint of actual habitation. A goodly number of men know intimately some portion of Alaska. It is safe to say that no one man can speak from personal knowledge of all portions.

On an estimated area greater than that of all the States north of Tennessee and east of the Mississippi there is a population of 32,052, or less than in most single counties of the populous east.

General Halleck in 1868, by means of unconscious duplication of tribes under similar names and the insertion of a few imaginary ones, “officially” reported

82,400 people in Alaska; and to this Rev. Vincent Collyer in the same year added 11,900 as a special estimate of the Thlingit tribes. It has required a long time and severe services to get "cold facts" from Alaska, and evidently "bottom facts" have not yet been reached in too many instances.

The last ten years have witnessed greater progress in the knowledge of the geography and topography of this territory than any corresponding period since its discovery. The expeditions to the Alpine coast region and Mount St. Elias by Swatka, Libbey, Seton-Karr, and Russell; the interior explorations by Swatka, Dr. Hayes, and the Frank Leslie Illustrated Weekly expedition; the exploration of the course of the Copper River by Abercrombie and Allen; of the region of the Upper Yukon and the Porcupine River by McGrath and Turner; of the basins of the great Kowak and Noatak rivers by Cantwell and Stoney; the soundings and surveys by the Coast Survey, the U. S. Revenue Marine, and the U. S. Fish Commission steamer *Albatross* comprise the substance of geographical work.

A report of the expedition to Muir Glacier, Alaska, under the charge of Prof. H. F. Reid, of Cleveland, has been recently published as an appendix to the report of the United States Coast and Geodetic Survey for 1891. This expedition was organized in the spring of 1890, and consisted of Prof. Reid, H. P. Cushing, H. McBride, R. L. Casement, J. F. Morse, and C. A. Adams. The party remained in camp from July 1 until the middle of September, mapping and studying the locality. The report embraces a general geography of the region, with a description of Glacier Bay, Muir

Inlet, Muir Glacier, its tributaries, drainage, geology, and the probable changes going on.

A great deal of old, and some new geographical information concerning the Orange Free State is communicated by the American consular agent in the July and September issues of the consular reports. The statistics of diamond mining are new and interesting, and especially an account of the 971 carat stone recently (June, 1893) found in the Jagersfontein mine.

The only general account concerning the island of St. Christopher—discovered by Columbus, and given his Christian name—ever printed in the consular reports is that by Stephen W. Parker in the September issue.

Among other interesting items he notes that out of a population of 31,000 there are few pure-blooded white people. No elections are held because the people, although emancipated fifty years ago, are, as a mass, not sufficiently intelligent to rule themselves. The members of the legislature are appointed by the Governor. The island has been a sanitarium for the last one hundred years or more; but Mr. Parker regards the neighboring island of Nevis as the best winter resort in the world. No crop other than sugar is considered, and this to the value of \$2,000,000 is annually raised and exported—largely to the United States.

Lieutenant A. F. Fechteler of the U. S. Steamship *Albatross* reports to the Navy Department some very recent information, accompanied by two charts, of the Shumagin Islands in the Gulf of Alaska.

Lieutenant Alexander McCrakin of the U. S. Steamship *Marion* communicates information pertaining to Koh Kram, near the eastern shore of the Gulf of Siam.

Except on the hilltops the country is thickly wooded. The surface is generally hilly and rises to a height of about 700 feet above the level of the sea. An engraved sketch of Koh Kram bay on the northwest side of that island accompanies *Notices to Mariners* for Sept. 2, 1893.

The "Cherokee Strip," so called, which was recently added to the territory of Oklahoma, is 200 miles long, 56 miles wide and embraces 8,144,682 acres.* It lies between the 96th and 100th meridians of west longitude, with the southern border line of Kansas as its northern boundary, and the Creek country and territory of Oklahoma as its southern. It is said to be the finest body of land of its size on the American continent, "With soil of surpassing richness and depth, mineral resources of great value and inexhaustible quantity, natural scenery unrivalled, and a climate of delicious mildness and salubrity." Topographically it is a rolling country and plenteously watered. The soil of the bottom lands and prairies is soft and loamy, and offers ideal conditions for the unlimited production of corn, wheat, tobacco, cotton and potatoes. The strip is already traversed by four lines of railroads with several other lines just a little outside. The price paid the Cherokees by the Government for the relinquishment of their interest in these lands was \$8,595,736, or \$1.05 per acre. The prices fixed by law to resell to homesteaders are \$2.50, \$1.50 and \$1.00, according to location. Some of the land between meridians 96 and 97½ is said to be worth at least \$50 per acre. So eager is the desire to obtain possession that the territory of Oklahoma will in all probability, within a

* 200 miles x 56 — 11,200 x 640 acres — 7,168,000.

month, have an accretion of at least 30,000 to its population.

BOUNDARIES AND ARBITRATION AND TOPOGRAPHY.—Near the waters of the boundary line between the United States and Canada lies Pope's Folly Island. The island is not valuable in time of peace, but in case of war it would be a decided advantage to the country possessing it. The possession of this island has long been in dispute. It appears that the first chart issued by Great Britain showing the boundary line between the United States and Canada gave the former country the island, but a subsequent chart includes it in Canadian territory. The discovery of the first chart is quite recent. The Superintendent of the Coast and Geodetic Survey and Hon. W. F. King, of Canada, are Commissioners to determine the ownership.

The same gentlemen have still in charge the survey of that part of the line which separates the narrow strip known as Southeast Alaska from British Columbia. The operations of the surveying party this season will be confined to the vicinity of three rivers which cross the narrow strip of territory involved. These rivers begin just north of the Portland Canal and are the Unuk, the Stikine and the Taku.

Prof. George Davidson, assistant in charge of the division of the Coast Survey on the Pacific coast is engaged with a party near Carson City, Nevada, making observations to determine the disputed boundary between California and Nevada.

Capt G. S. Anderson, U. S. A., the acting superintendent of the Yellowstone Park, recommends that

the boundary lines of the Park be resurveyed and marked. He says that the most disastrous forest fire of many years occurred during July of this year, when a strip about seven miles long and two or more miles wide was destroyed. Wild game is very abundant, but poaching is on the increase. The Secretary of the Interior, who recently visited the Park, says that its geysers, lakes, mountains and canyons are beautiful and interesting beyond description, and that more of nature's wonders and beauties could be seen there than anywhere else.

Within a few months the case of dispute between Argentina and Brazil for the fertile territory lying between the rivers Uruguay and Paraná, which goes by the name of Misiones, will come up for settlement before the President of the United States, who has been selected as arbitrator by the two Republics. This dispute has been maintained for a century and a half in succession between Spain and Portugal, and between Argentina and Brazil as the heirs of their mother countries. The Jesuit fathers planted their missions in this region (hence the name) and taught the natives agriculture, handicrafts and church ceremonies. These natives were faithful, peaceful and industrious, and with the natural advantages of climate and a most prolific soil, the interfluvial territory whose lines had never been properly fixed became and continued to be the object of longing desire by both countries. Señor Zeballos, the new Argentine minister to the United States, is specially charged with the management of the case against Brazil, and will present the argument of his country.

Señor Zeballos is a scholar and writer of note. He established the Geographical Society, and organized expeditions to Patagonia, the lands of the Araucanians, the desolate grassy leagues of the Gran Chaco and other parts of the Argentine but little known. He is the author of "Visit to the Araucanian Indians" and "Conquest of Fifteen Thousand Leagues," and three novels which deal with Indian life and customs. He has been accumulating materials for a history of the Paraguayan war.

The *real* victory for this country at the Paris tribunal is that the sound principles of international law for which we had always contended have been vindicated and reaffirmed. Beginning with the administration of Washington the United States have been the earnest champions and defenders of the doctrine of the freedom of the seas. We have had war in vindication of this right, and when we joined England and France in suppressing the slave trade we guarded the admission of the right of search, even in the case of suspected slavers. The pretensions put forward during the recent arbitration, to an exclusive ownership or territorial jurisdiction over the waters of Bering Sea, either as the assignee of Russia or upon any other ground, were inconsistent with all the traditions of the American people. Senator Gray, himself a distinguished jurist, well says: "I have never thought there could be any other outcome. It leaves the freedom of the seas unimpaired to the United States and all other peoples, regulated only by the comity of nations and settled international law. To no country in the world is this freedom more important than to us of the United States."

There has recently been printed a report of the proceedings of the Topographical Conference held at Washington in 1892. This Conference convened under instructions of the Superintendent of the Coast and Geodetic Survey, and held daily sessions from January 18 to March 7. Appended to the report are papers embodying the facts and reasons which have governed the members of the Conference in forming opinions and coming to conclusions on the subjects referred to them.

Among the principal conclusions formulated by the Conference were the following :

That balloon photography is not applicable for the purposes of a rapid and economical topographical survey ;

Rules to govern topographical surveys in the several typical regions mentioned. Also, estimates of the approximate cost per square mile for such surveys ;

That over a sparsely inhabited region a less elaborate survey, costing much less per square mile, could be made, which, though lacking in much desirable information, would prove useful in the development of that region ;

That the plane-table is unequalled in its usefulness in every order of work, and that certain improvements to it should be made under the supervision of a committee ;

That the mean sea level is the most desirable datum plane for elevations in topographical surveys ;

That photography may be found at times a useful auxiliary, but under ordinary circumstances cannot compete with the plane table in rapidity, economy, or accuracy ;

That the metre should be adopted as the unit for vertical as well as for horizontal measures ;

That the methods of the Geological Survey would not prove satisfactory or economical for our coast work ;

That a manual be prepared of all instruments in use by the Coast Survey, and a new table of heights, using the metre instead of the foot as the unit for elevations ;

That topographic surveys, to subserve the greatest number of useful purposes, should not be made on a scale smaller than 1-40,000.

The report contains a table of scales of topographical surveys of foreign governments and the United States ; plates of revised conventional signs, and notes on European topographical surveys and maps.

HYDROGRAPHIC.—A pilot chart of the Pacific Ocean is a possible new feature of work in the Hydrographic Office. While the waters of the Pacific do not afford so many interesting features as are usually shown on the pilot chart of the Atlantic Ocean, Commander Sigsbee, U. S. Hydrographer, believes that there is enough material in the way of observation of the movements of the seals, icebergs, and storms, in the Northern Pacific especially, to provide a monthly chart which will be of great value to the shipping interest of the west coast and, in fact, of the world.

Lieut. Beehler, assistant in the Bureau of Navigation, succeeds Ensign Everett Hayden in the division of marine meteorology—the science so materially developed by the latter gentleman. Lieut. Beehler is a successful naval officer and an accomplished student in matters relating to navigation. He is the inventor of

the solarometer, an instrument intended to improve the art of navigation by supplanting the compass and sextant, and by which the ship's exact position is obtainable at any time of day or night whenever a heavenly body is visible.

The Hydrographic Office has recently issued a publication by Mr. Herrle giving the depths over bars, and the draft that can be carried over, and the mean rise and fall of spring, mean and neap tides for the principal harbors and anchorages on the Atlantic and Gulf coasts of the United States.

The people on the Pacific coast of North America have high expectations of the reported enormous coal deposits in Alaska, some of which are of fine quality, and so situated as to make mining easy and inexpensive. It has been stated that some of the ledges crop out so near the shore that vessels can be loaded near the mouth of the tunnel through which the drifts are reached. The climate of Alaska will not prohibit the working of coal mines even in the winter, after the drifts and shafts and tunnels get well under the surface. A writer in the *San Francisco Post* says that the water carriage of coal from Alaska to San Francisco during the summer months when it would be brought there should be very inexpensive. A vessel could load coal and bring it there cheaper than a railroad could haul it from the Pennsylvania mines to New York.

Every one who has been through the hall beneath the dome of the Capitol has noticed the figures which run in a circle nearly around the wall, depicting the principal events in the march of American progress. A blank space has been reserved for the delineation of one of

the greatest events of all. It will portray the driving of the last spike of the first transcontinental railway. The principal character in the scene died not long ago, leaving an unparalleled legacy to the cause of education.

Few people have any definite idea of the actual sum of money represented by the property which will eventually come into the possession of the trustees of Leland Stanford University. A reliable authority on the Pacific coast says it consists of three pieces of land: Palo Alto, 8,400 acres; Gridley, 22,000 acres, and Vina, 59,000 acres. It is difficult to form an adequate idea of the money value of such land at the present time, but the yield of a fractional part of Vina alone represents an endowment of \$8,000,000, and a present income of \$240,000.

If all the land in the three properties which is suited to vineyard growing were planted in vines it would represent the enormous sum of \$200,000,000 and an annual income equal to the *endowment* of the richest university in America. These estimates take no account of the value of these estates in the great future. At present a large portion of Palo Alto and Gridley is under high cultivation, while less than 5,000 of the 59,000 acres of Vina—the richest of all—are planted in vines.

Admiral T. A. Jenkins, who died recently in this city, was in many respects a most remarkable man. From the year 1828, when he entered the navy as midshipman to the end of his life at the age of 82, he served his country well and faithfully. Aside from his active participation in the strictly naval operations of the Government during that long and very eventful period,

his services in connection with the Coast Survey and the Light-house Board were of the highest order, and characterized by remarkable intelligence. He contributed extensively to the literature of marine meteorology hydrography and deep-sea temperatures. To the end of his life he was an omnivorous reader and graceful writer. Until he was taken sick he bought all the new books and was well posted in what was going on in his own profession, in science and in literature.

By long accretion, the amount now credited by the Register of the Treasury to the fund popularly known as the "Conscience Fund" amounts to \$266,089.56. This account was opened in 1811 and is intended to show the receipts of money by the government from unknown persons. The funds are turned into the general treasury as miscellaneous receipts, and are used like other assets, as Congress may direct.

Apropos of this is the "Patent Office Fund," which is the excess of receipts over the expenditures of that office for many years. The amount is large—well up towards a million dollars; but as a matter of fact the balance exists only on paper, the entire receipts of the office having been turned into the treasury and used as are other receipts of the government. Nevertheless the book-keeping balance is accentuated annually by every Commissioner of Patents as an argument for a new building. The recent removal of all models from the great marble building long known as the Patent Office, to make room for other government bureaus, changes a "landmark" of Washington sight-seers. It is not likely that this collection will ever again have the extensive prominence it has so long had, but in the future it will be

accessible in plainer and more obscure quarters, while the "Patent Office" so called will be known as the "Department of the Interior." At present the long procession of inventors' models occupies the third and fourth floors of a building temporarily leased for the city Post Office. *Sic transit.* The grand structure now vacated was built exclusively for the Patent Office before the Department of the Interior was thought of. Following the order of precedent, the same fate awaits the building now being constructed for the Library of Congress. This building—one of the largest, if not the largest in Washington, excepting the Capitol, contains more space than will be required for library use for a generation to come. Meanwhile every department of the Government is overcrowded. Already interests are working quietly to secure quarters in this great building. If one, then another, and more, until the National Library building will be such in name only.

NOTES.—Since August 1st commerce has been practically suspended between Russia and Germany. Owing to disagreements in respect to a commercial treaty, negotiations were broken off, and Russia declared against Germany a retaliatory tariff in which all existing import duties should be advanced 50 per cent. Germany promptly retorted by declaring a similar increase of 50 per cent. in the duties on all imports from Russia. The value of this state of affairs to America and other exporting countries lies in the fact that the German embargo cannot be modified until the meeting of the Parliament in November, by which time most of

the rivers and canals of Russia will be closed to navigation, leaving transportation to the railways, whose rates for long distances, especially in Russia, are practically prohibitory for grain and coarse products. As the Russo-German commerce for the coming autumn and winter must therefore practically cease, American producers and exporters may well examine the nature and extent of this newly opened opportunity.

The German Minister of War has ordered the military authorities to use Indian corn mixed with oats in making up the rations for army horses. This may lead to heavy importation of American corn.

Of a total exportation of green fruits from Palermo during the year ending June 30, 1893, amounting to \$2,496,083, the shipments to the United States were \$2,376,929. That Florida and California will at no distant day supply the orange demand of the world is demonstrated by the constant decrease in the exportation of that fruit from Sicily to the United States. The export of last year was only half that of the preceding year, and as a consequence vast numbers of orange groves have been supplanted by the lemon.

A concession has recently been given to a Lisbon corporation to lay and operate a submarine telegraph line between Mozambique and Quilimane, 300 miles distant. There is already a line between Quilimane and Tete, a distance of about 325 miles. The same corporation is authorized to construct a line between Tete and Zumbo, 220 miles, and from Tete to Missala, 145 miles. Also branch lines to Nyassaland in British Central Africa. If these concessions are carried out, the southern part of Nyassaland and all the

Zambezi Valley under Portuguese rule will be placed in telegraphic communication with the outer world.

A very useful adjunct to the silver question is a handbook recently issued from the Government printing office containing a compilation of the coinage laws of the United States from 1792 to 1893. It was prepared under the direction of the Senate committee on Finance. An appendix includes a number of valuable statistics in connection with this question. H.

OBITUARY.

JOHN RAE, M.D., F.R.S.

Dr. John Rae, for thirty-five years a Corresponding Member of the American Geographical Society, died at his home in London on the 22d of July last. An attack of influenza in April had left him in a weakened condition, though he kept up with surprising energy and interested himself in his usual occupations to within a few days of his death.

Dr. Rae was born at the Hall of Clestrain, Pomona, Orkney Islands, September 30, 1813. He studied medicine at Edinburgh and took his degree from the Royal College of Surgeons in 1833; and shortly after went out in a Hudson's Bay Company ship to Moose Factory, on Hudson's Bay. There he remained in the service of the Company till June, 1846, when he set out, at the head of a party of ten men, in two boats, to survey the 700 miles of coast which separated Ross's explorations in Boothia from those of Parry at Fury and Hecla Strait.

Rae started from York Factory, with four months' provisions but no fuel, on the long voyage to Repulse Bay, where he wintered in N. lat. $66^{\circ} 32'$. The survey was accomplished in the spring. A memorandum in Dr. Rae's handwriting says, of this expedition and the one of 1853-4 :

In both of these he carried with him only four months' provisions for his party, and was absent fifteen months, having on return to York Factory one and one half month's provisions remaining. All game and fish for food were obtained by the party; chiefly deer. We had not a bit of fuel to warm our stone house with, and the smoke of the andromeda used for cooking would not go out by the chimney. We had to keep the door open all the time of cooking, as the smoke was very

pungent. The temperature usually fell 15 or more degrees when the cooking was going on. We (had) no oil for a fire lamp in the snow hut in 1853-4.

In 1848 Dr. Rae, as second in command, accompanied Sir John Richardson's expedition from the Mackenzie River to the Coppermine, in search of Sir John Franklin; and he descended the Coppermine, after Richardson's return to England. The next year, with two men, he made a sledge journey along the coasts of Wollaston and Victoria Land. The daily march was twenty-five miles, Rae pulling his own sledge and inspecting personally every turn of the coast. The journey was continued to Winnipeg and thence to Crow-Wing, Minnesota. In this expedition, which lasted nearly eight months, and covered more than 5000 miles, Rae explored seven hundred miles of coast previously unknown.

The Founder's gold medal of the Royal Geographical Society was awarded to him in 1852, and in 1853 he took command of another expedition, fitted out expressly for him by the Hudson's Bay Company, for the purpose of tracing the west coast of Boothia as far north as Bellot Strait and uniting the surveys of Sir James Ross and Dease and Simpson. His success was complete; he surveyed 400 miles of coast not laid down on the map and proved that King William Land was an island.

Among the Eskimo he found and secured many relics of Sir John Franklin's party, and the information he acquired dispelled the mystery which had shrouded the fate of those heroic men. When Dr. Rae returned to England Sir James Graham, the first Lord of the Admiralty, told him that "his party was entitled to a

reward of £10,000 for bringing the first information of the fate of the Franklin expedition, and that he would stand in his own light if he did not put in a claim for it." The claim was made and satisfied.

In 1860 Dr. Rae made surveys in the Faroe Islands, Iceland and Greenland for a proposed line of telegraph to America ; and in 1864 he began another survey for a line from Winnipeg across the Rocky Mountains. In the course of this latter enterprise he accomplished the descent of the dangerous Fraser River for several hundred miles in a canoe and without a guide.

Dr. Rae published but one book, the "Narrative of an Expedition to the Shores of the Arctic Sea in 1846 and 1847." His other expeditions are described in brief reports addressed to the Royal Geographical Society, and he is the author of papers on the Eskimo, on the navigation of Hudson's Bay, and on Polar exploration ; but his written contributions, though they testify to his thoroughness and accuracy and to his rare qualifications, bear no proportion to the magnitude and the solidity of his work. He wrote with simplicity and force, but he was more concerned to do things worthy of record than to record them. He had the gifts of the born explorer, the habit of exact observation, courage and fertility of resource, untiring energy, activity and strength ; and with these a firmness and generosity of character that won the respect and the affection of men.

A funeral service was performed in St. John the Baptist's Church, Addison Gardens ; but the body of Dr. Rae rests at Kirkwall, in the churchyard of St. Magnus Cathedral.

ISAAC BERNHEIMER.

Mr. Isaac Bernheimer, a Fellow of the American Geographical Society since the year 1859, and for the past nineteen years a member of the Council, died suddenly at Saratoga, N. Y., on the 23d of July last.

Mr. Bernheimer was born in Bavaria in 1812, and early in life removed to this country and entered into business in Philadelphia. In 1849 he established himself in New York as a manufacturer and merchant, and retired from business in 1873 with an ample fortune.

He was a man of amiable disposition and simple tastes, liberal-minded and just in his dealings, and an unostentatious contributor to many charities.

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1893

No. 4.

GREECE AND MODERN ATHENS.

BY

MISS ANNIE S. PECK

(of the American School of Archæology, at Athens).

Some years ago, a traveller, while on the voyage from Western Europe to Athens, was addressed with the following words: "Ah! so you are going to Greece without being compelled; you go the right way to work to look for amusement. Imagine mountains without trees, plains without grass, rivers without water, a sun without pity, dust without mercy, fine weather a thousand times more tiresome than rain; a country where the vegetables grow ready cooked, where the hens lay eggs hard boiled, where the gardens have no leaves, where the color green has been effaced even from the rainbow, where your weary eyes will look for verdure and find not even a salad to repose upon." But the traveller, nothing daunted by this startling picture of a country of which his dreams had been so fair, pressed on to know the worst—to find that, while these words contained a modicum of truth, the land of Greece is

yet a realm of beauty; worthy, not merely of a poet's pen, but of the personal observation of every lover of nature and art, as well for the fascinations of its present as for the glory of its past. Indeed, there is no country in Europe which so well deserves the attention of the student and traveller, as none contains more beautiful scenery, sites of greater historic interest, or such matchless treasures of art.

Hitherto, Greece has lain beyond the route of ordinary travel. Of the thousands who yearly seek Italian skies, hardly one in a hundred crosses over to the land of Plato and Pericles. In comparison with Italy, Greece is, therefore, almost a terra incognita. Though situated in Europe and not far from Italy, it somehow appears more remote than its distance from the Italian peninsula would seem to warrant. This is not, however, without reason, for Greece, as it were, faces the East, most of its cities and harbors lying on that side; while Italy, on the contrary, faces the West. The two peninsulas lie back to back, and while Italy is a part of Western Europe, Greece belongs to the Orient. Its people evidently recognize this fact; as, in Athens, when one speaks of going to France or England, he says, as we do, that he is going to Europe, as if he lived in Asia or in Africa.

So unfamiliar is this classic land that even the proper name of the country, Hellas, and that of its people, Hellenes, are doubtless unknown to many. When a country has so euphonious a title as Hellas, and one so easily transferred to our own language, it does seem a pity that we should persist in calling it by the unmelodious and suggestive name of Greece, merely because

the Romans, more than two thousand years ago, persisted in calling its inhabitants Graeci or Greeks, instead of their proper title, Hellenes.

This country of Hellas, then, is a very small one, at present comprising only half as much territory as the State of New York. Its population is about two millions, and there is one very remarkable fact in connection with it, which is quite unexplainable and unparalleled, except in the frontier settlements of the West, where the cause is obvious. There are, in this country of Hellas, nearly five per cent. more men than women. It is, therefore, the paradise of women, as marriage is almost universal; so much so that I remember meeting but one single lady of uncertain age, while I was in Athens.

In ancient days, Hellas, in the strictest sense of the word, comprised a territory even smaller than now, Thessaly not being included; while, in later days, on the contrary, Macedonia was not deemed a foreign country, but claimed a share in the glories pertaining to the name of Hellas.

It is, surely, a matter of wonder that a country so limited in extent, should, in the short space of two centuries, have produced philosophers, statesmen, poets, orators, and historians, such as all the rest of the world has not been able to surpass, and such marvels of sculpture and architecture as it has never equalled. We must not, however, forget that the small area of continental Greece by no means contained all those who contributed to her fame and shared in her glory. The islands of the Aegean, the coasts of Thrace and Asia Minor, Sicily, and some portions of Italy were

either wholly inhabited or partially colonized by Greeks, who, preserving unadulterated their race and language, sharing the same ideas and worshipping the same gods, carried Hellas with them and formed an important factor in Hellenic civilization. In the Aegean Sea there is hardly a solitary spot between sea and sky; so the hardy mariner early ventured forth from the mainland, and passing from one island to another soon crossed the sea. Accordingly, from the days of Priam until now, the same peoples with the same language and customs have inhabited both shores. Arbitrary political divisions have made only an external separation, and the Greek of to-day is as much at home in Smyrna as in Argos.

To the peculiar physical and climatic characteristics of the country, the rapid and artistic development of its inhabitants was doubtless in some measure due. The Aegean Sea apparently had a wonderful power in breaking up the land into islands, peninsulas, necks, and promontories, furnishing innumerable harbors. Such a country is sometimes called Greek, as this characteristic is here most strikingly manifest, and is shared with continental Hellas by all the coasts which the Greeks inhabited.

Hellas is cut off from the Danube valley on the north by high mountain chains, extending from the Adriatic to the Black Sea, the Thracian Haemus, with impervious ridges. The country develops towards the south, intercourse with the East being especially easy, as that side is most favored with harbors.

This was particularly fortunate for the people in the days of their dawning civilization, as thus they were

brought into contact with the older nations of the Orient. Thence the Greeks gathered germs of every kind of knowledge, which under their own sapphire skies bore the finest fruits and flowers of antiquity. Italy, facing the west, was less open to eastern influences, and hence the bloom of her civilization was several centuries later.

But the whole of the peninsula was not equally favored. Albania and Illyria, to the northwest, consist of rocky ridges and narrow defiles, with a savage, inhospitable coast; and have always been the home of barbarians. Macedonia, east of the Scardus pass, forms a striking contrast, containing broad lowlands and great rivers, belted in by chains of lofty mountains. Macedonia and Thrace are connected with the Greek world by the formation of the coast, but the interior differs, being a highland country cut off from the sea. Advancing into Thessaly we pass on its northern border the majestic form of cloud-capped Olympus, rising to a height of ten thousand feet. To the south the country loses a little of its Alpine character, though the landscape in some quarters of Thessaly, with its rugged mountains, frowning cliffs, and dusky glens is still so severe that the Greeks here pictured the scene of the terrible conflict among the gods, when hills were torn up to serve as missiles, and Pelion was piled on Ossa. Now the formation increases in multiplicity, and bays, corresponding to the ramifications of the mountains, open the land from east to west. Here, at 39° N. Lat., begins Central Greece, Hellas in the strictest sense. In the west the region of the Achelous River in Epirus is excluded from the general breaking up of Greece, as

it was, also, from its general development; while on the east the Oeta chain extending to the Malian Gulf forms the pass of Thermopylae, where there is only the breadth of a road between the morass and the rocky heights. From here across to the Corinthian Gulf is a distance of only twenty miles. This is an isthmus from which the peninsula of eastern Central Greece extends to Sunium. Here is the main range of Parnassus, 8000 feet high, held sacred not only for the celebrated oracle at its base, but also as the starting point of a new human race, the scene of the Deucalion legend of the flood, when he and his wife Pyrrha, saved on the mountain from the destruction which overtook mankind, repopled the earth by throwing behind them the stones, which became men and women.

Near Parnassus is Mount Helicon, haunt of the Muses, and next, Cithaeron and Parnes, separating Attica from Boeotia. These two districts, while adjacent, are wholly dissimilar. Boeotia, though having water on both sides, is practically an inland country, since the mountains rise so abruptly from the sea that there is hardly any coast; and in the interior, as at Thebes or Orchomenus, one would have no reason to imagine that the sea was within a thousand miles. It has damp fogs and stagnant waters, especially the large and shallow Lake Copaïs, which frequently overflows its banks. As a consequence, there is a rich soil and luxuriant vegetation; also, as a consequence, the people have always suffered from the malaria, which has a debilitating effect, not only upon the body, but on the mind; and this, no doubt, was the reason for the well-known stupidity of the Boeotians, who were a notorious

contrast to their brilliant Attic neighbors. It is said, too, that a similar difference may be observed at the present day.

Attica, on the contrary, projects into the sea, with gulfs and bays, and has the clear atmosphere of the island world to which it belongs. Its mountains are near the centre, and it has a dry, rocky soil, so that greater labor was needed to develop its resources.

The Peloponnesus is, in itself, a whole. Arcadia, in the centre, is surrounded by a mountain chain having branches in the surrounding districts, which are terraces like Elis and Achaia, or have new mountain ranges forming new peninsulas, like Messenia, Laconia, and Argolis.

Arcadia is not at all the ideal landscape which one might suppose. It was the later Roman poets, and not the Greeks, who described this district as a smiling land, with grassy vales, watered by gentle pellucid streams, and inhabited by picturesque shepherds and sheperdesses, tending their flocks and making love in romantic fashion. It is, however, by no means a landscape for an opera, but the least beautiful region of Greece. The scenery is forbidding and monotonous, a bleak, unlovely table-land, covered with low, steep mountains and marshy plains. The original river Styx is still to be found here, so violent, noisy, and terrible that the ancients made it a stream in the lower world. In some of these river beds a torrent will sometimes appear so suddenly that in an hour there may be a large stream where one has walked dry shod; but in ordinary times these little rivers remind one of children put to bed in a grandfather's four-poster.

In the manifold contrasts there are certain laws which govern the development of the country. The Greeks were debarred by mountains from intercourse with the mainland on the north, while the mountains and the sea co-operate to divide the country into sections, the sea at the same time furnishing a means of intercourse between the sections, and also with the opposite coasts. In the northern highlands the people were compelled to be peasants ; a hardy race of hunters and shepherds, simple and natural. Thence they issued south where their mission was to create states and establish intercourse with neighboring peoples. Soil is not everything, but it is important. The inhabitants of a plain are defenceless, and millions easily become subject to one ruler. But in the mountains, as in Switzerland, courage rises with the ability to defend. The multiplicity of culture and manners, the varieties in language, as well as the desire for political independence found among the Greeks, resulted from the mountains. At the same time, the valleys, though secluded and guarded, were open to commerce. The sea was easily agitated and calmed, having a multitude of safe bays opening into it, but its secrets are never wholly learned, hence it promotes progress. Greece was much less fertile than Asia Minor, and labor and struggle were needed to develop its resources. Within its narrow boundaries, however, the climate goes from beeches to palms. North of the Aegean Sea the climate is like that of central Germany, while in the Peloponnesus semi-tropical fruits are abundant. Mountains like Athos bear every species of tree that is found in Europe.

Thessaly produces few olive trees, and the entire Pindus is destitute of the flora of Southern Europe, but in the latitude of 39° the warm sea air penetrates into the interior. Phthiotis produces rice, cotton, and the olive. Euboea and Attica have scattered palms, and the date-palm in Messenia bears fruit. At Athens, southern fruits need special cultivation, but in Argolis, just across the Saronic Gulf, lemon and orange trees grow in a forest. There is no other region of the globe where zones of climate and of flora follow in so rapid succession. As a result, there is great variety in the living forms of nature, and a diversity of productions, which early aroused the attention of men and promoted traffic.

Such a country could not fail to mould its inhabitants, at least when the race was young; to develop in them activity and industry, a sense of beauty, a love of freedom and personal individuality; and these qualities were highly characteristic of those who dwelt here. When we see how the districts are separated from each other by ranges of mountains, we cannot wonder at the peculiarities and jealousies of neighboring cities, between which intercourse was so difficult. But in spite of these divisions, the Greeks had a distinct nationality and everything was stamped with their own life; their art, science, politics, and religion.

Their physical condition is shown by their plastic art. They were of average height, neither fat nor lean. In their delightful climate and with their simple manner of living, sickness and deformity were unnecessary and beauty was the rule. They were proudly conscious of their physical and mental gifts; and, in fact

seem to be so to-day ; though in coming in contact with this spirit at the present time, one would be apt to characterize it as vanity and conceit.

The general history of Greece in the classical period is more or less familiar to all. The days of her prosperity were brief, indeed, but glorious, with a glory that is imperishable ; and though two thousand years have passed since then, there has never been a time within the period of modern history when so great an interest as at present has been felt in the study of the life and the works of that remarkable people. It seemed almost as if the Greeks had dropped out of existence under the sway of the Byzantine Empire and the Moslems. Indeed, the country did relapse almost into a wilderness. But in the early part of this century, a new life dawned, and once more Greece took her place among the nations.

The invasion of the barbarians in the dark and middle ages, and the stern dominion of the hated Turks have left heavy traces upon the land ; and while the nation, since gaining her freedom, has advanced with rapid strides, it must be remembered that that was hardly sixty years ago. Athens itself was but a collection of a few miserable huts in the vicinity of the Acropolis, when the seat of government was removed thither from Nauplia in 1835. Its rapid growth to its present population of more than one hundred thousand is like that of many of our western cities. It is due, however, simply to its being the seat of government, and not to its containing within itself the elements of so great prosperity. The transfer of the capital from Nauplia to its present site was therefore a matter of

sentiment, in which feeling, not only the Greeks, but the whole western world had a share.

Who that has mourned over the downfall of Athens at the close of the Peloponnesian war, and despised the envious hatred of the Spartans, incompetent for the leadership themselves, and yet unwilling to see Athens possessing the artistic, literary, and political supremacy, does not now rejoice that at length, after many weary years Athens again takes her place as the leader of united Greece, a place which no envious Spartans, Thebans or Corinthians will be likely ever again to wrest from her?

Here, as formerly for philosophy, is now the principal site for the study of the antiquities of Greece.

To reach the "violet-crowned" city, many travellers come from Trieste by a four days' voyage, two of these over the stormy Adriatic; a route which may be convenient and even agreeable to the hardy sailor, but to be shunned by all whom Poseidon compels to pay tribute, especially at the time of the autumnal equinox, when I, unfortunately, fell a victim to the power of his majesty. For two days there is no land in sight, but the two days following, spent in sailing past the islands of the western coast, and around the Peloponnesus, are almost a compensation for the wretched monotony of the first half of the voyage.

The first Greek soil to meet our eyes was that of Corfu, ancient Corcyra, where now, as in former days, there is a thriving commercial city.

The glimpses which we gained as we sailed along, of the islands and distant coasts of the Peloponnesus, prepared us to behold a country unlike any that we had

previously seen. Here were rugged, almost precipitous promontories, rising abruptly from the sea, apparently barren, and destitute of human habitation. No tints of green gave evidence of pasture or wood, and no curling smoke indicated the presence of life. Far away, indeed, one could fancy that along the head of some deep gulf, the coast was less frowning, and that a village was there nestled amid fertile fields; but that was in the dim distance. Near us, all was rocky, barren and precipitous; though in rounding the southern extremity of the Peloponnesus, we strained our eyes to catch sight, if possible, of a hermit who dwells on the face of one of those frowning bluffs, five hundred feet above the sea, his only companion the distant passing sail, for the benefit of which he carefully keeps a light burning through the darkness.

It was dusk ere we reached this promontory of Sunium, so that we missed the pleasure of descrying in the distance the historic spots which we were eager to behold. Our ship was even compelled to anchor outside the ancient harbor, the entrance to which is so narrow that one might well prefer daylight for its passage.

Early next morning we were on deck and, overlooking the fine harbor at our feet, gazed eagerly in search of the far-famed Acropolis, and at the beautiful panorama of plain and distant mountains spread out before us.

But the shouts of the boatmen, who, in their little skiffs, surrounded the vessel, recalled us to the prosaic necessities of baggage and debarkation, and soon our feet were planted on classic soil. A railway now connects the busy seaport of the Peiraeus and its forty

thousand inhabitants with the more aristocratic seat of government four miles distant, but the stranger on his arrival, in order to save a change from carriage to car and again from car to carriage, is more likely to engage one of the waiting vehicles, which takes him and his luggage direct to his hotel in Athens. It is, however, a rather monotonous drive over a very dusty road; and the driver will persist in halting at the halfway house; he says, to rest his not very stalwart specimen of horse-flesh, but more likely, to have a chat over a cup of coffee or *raki* (brandy) with some of the inmates. At length the Acropolis draws near; and now, winding around its base, we soon reach Constitution Square, on the sides of which the principal hotels are situated.

To the east, looking down Hermes Street, where the principal shops are located, lies the royal palace, back of the square of green, which is planted with orange trees and oleanders.

But, before examining the city in detail, I should like to give you a general idea of the Athenian plain. You have heard how it is surrounded on all sides by mountains, except toward the sea. If you stand on the Acropolis, facing north, you have on your right Hymettus, on your left, Aegaleos, long ridges extending down to the sea. In front is Mount Parnes, and off to the right, between Parnes and Hymettus, is the graceful peak of Pentelicus. Now, facing in an opposite direction, toward the south and southwest, there is a magnificent prospect of plain, sea, and distant mountains. Four miles away, but in the clear atmosphere seemingly not half that distance, is the beautiful harbor Peiraeus and the bay of Phalerum, then the Saronic

Gulf, with the islands of Salamis and Aegina ; while beyond loom up the mountains of the Peloponnesus and the Isthmus, some rising to the height of 6000 or 7000 feet, the whole forming an exquisite panorama of sea, sky, and mountain scarcely to be equalled elsewhere.

Hymettus, a few miles east of the city, is a very peculiar ridge of almost uniform height, rising quite abruptly from the plain, and extending for many miles with but a single break. The highest point, just east of the city, is a little more than 3000 feet above the sea. It is a desolate mountain, with round, soft outlines and dull, gray tints. These, at sunset, give place to those delicate hues which still entitle the city to the epithet, "violet-wreathed," so long ago bestowed. Parnes, nearly 2000 feet higher, with a clear outline and bold design, has a more wild and savage appearance.

Aegaleos, on the west, is lower and more irregular in outline, and farther from the city. There is a pass, now called Daphne, through which runs the modern road to Eleusis in about the same place as formerly the Sacred Way, over which the procession passed, sometimes numbering thirty thousand, for the celebration of the Eleusinian Mysteries.

To the northeast is Mount Pentelicus, whence came, and still comes, the far-famed Pentelic marble which contributed so much to the adornment of ancient Athens. It is the finest statuary marble in the world, and the mountain still contains material for twenty Parthenons.

The plain, itself, is far from being level. In the city,

besides the Acropolis, rise the hills of the Areopagus, the Museum, Pnyx, and the hill of the Nymphs, and still higher, the peak of Lycabettus, on a spur of which the royal palace is situated. Just east of the city flows the stream of the Ilissus, a mere brook, in which Socrates used to moisten the soles of his feet in the hot and dusty summer weather. That is more than he would be able to do at the present time, as this so-called river dries up altogether in summer, while in the spring, after the heaviest rains, it rushes along a foaming torrent about knee deep.

The extremely rocky soil is here apparent, and I noticed that not only does the solid rock, which has a very thin coating of soil, frequently project from the surface, but the plains are strewn with small stones. Even in the cultivated fields near Athens, small stones about the size of the fist were scattered all over the ground; and I thought the Greeks must be very lazy not to clear off their fields. But when I made such a remark to a Greek gentleman, he said: "O no! they were not lazy. They left the stones there on purpose to keep the soil down. If they took away the stones the soil was so light that it would all blow away."

On the western side of the city is the Cephissus River, somewhat larger than the Ilissus, and most useful for purposes of irrigation. Indeed, so much of the water is drawn off for this purpose that the river loses its way in the sand below the city and never reaches the sea.

In October, the season of my arrival, almost the whole landscape exhibited a warm, brown tone, which would, I am sure, have delighted the heart of any

artist, and was beautiful even to a common mortal who holds a special aversion to that color; for the varied hues of soft, warm tints, from light yellow to darkest seal-brown, were shaded and combined in a manner most pleasing, if one did not reflect that they existed where grass ought to be. The shades of brown were broken only by the green olive groves which mark where the Cephissus flows, and the gleams of gray and white marble from Hymettus and Pentelicus.

This appearance was owing to the fact that, as usual, there had been practically no rain for four or five months. Naturally, it was frightfully dusty, and most of the country looked like a desert. The summers are very hot and disagreeable, so that most of the people who can afford it go to the seashore; some have cottages at Phalerum, while others go to the islands of the Aegean, where a more equable temperature prevails. Those who remain at home spend the middle of the day in the house, even the shops being closed for several hours at noon. Business is done before nine o'clock, and again towards sunset the streets are filled with people.

At other seasons, say from the middle of October to May, the climate is most delightful. The winter weather is like our September and October days, with occasional showers and a great deal of brilliant blue sky. Wild flowers blossom all winter, and frost and snows are rare. In the winter of 1885 and '86 there was no snow on the plain, and it appeared only for a few days on the summits of the neighboring mountains. Greece is warmer than Italy, and a far more delightful winter resort.

The autumn rains quickly change the face of the

landscape, and later, as you look over the plain, you behold all shades of green intermingling with and superseding the brown, as wheat fields, green grass, and vegetables are clothing the country with verdure. The plain is generally barren of trees except for the olive groves. Hymettus is perfectly bare and rocky, but the other mountains are clothed with a scanty garb of forests. Though rather barren the Athenian plain is delicate in outline and elegant in all its aspects, like the slender, graceful race it nurtured.

The most striking object in the modern city is, of course, the king's palace. It is built of white marble and limestone, in a plain and simple style, with an Ionic portico. The king is a man of forty-five or more; a good-looking, pleasant gentleman, formerly Prince George of Denmark, a brother of the Princess of Wales. The queen is a Russian, a cousin of the present Tsar. They may be seen almost any day, driving and sometimes walking in the street like any ordinary couple. It is said to be a particularly happy royal family. The king has not much more authority than Queen Victoria, as Greece is a constitutional monarchy; but he is quite popular, while the queen is extremely beloved. They have several children, and the coming of age of the Crown Prince a few years ago was celebrated with great festivities, as was also his marriage some months later. It is quite a polyglot family, as naturally the native tongues of the parents, Russian, and perhaps I may say German, as well as the Greek language must be familiar; French, of course, the language of the diplomatic circles and of fashionable society, while English is not neglected.

On the lower slope of Lycabettus is situated the building belonging to the American School of Archaeology, an institution established in 1882 for the purpose of promoting the study of classical literature and antiquities. For several years various annual directors presided over the school, the students in which are graduates of the various colleges contributing to its support. Later a permanent director was appointed, Dr. Charles Waldstein, a graduate of Columbia College, and an archaeologist of acknowledged standing in Europe; while an annual director assists in the conduct of the school. At the present time Prof. Richardson, formerly of Dartmouth, is the permanent director, Prof. White, of Harvard, the annual director, while Dr. Waldstein still lends his assistance in superintending excavations.

Similar schools are supported by the English, French, and Germans. All of them engage more or less in carrying on excavations in Greek soil, as well as in the study of existing antiquities.

It is obvious that the city in its appearance resembles many others in Europe. The houses are nearly all of limestone and stuccoed, though a few are of white marble. The roofs are tiled with pieces in the shape of a half flower pot. The city can hardly be called beautiful, except in its location and surroundings; though, perhaps, it has reason to be proud of its appearance if its age be considered. There are now a number of broad, handsome streets, but many are very narrow and circuitous, and are lined with small, low houses. On these are queer little shops of all sorts, and the people sit out on the sidewalks, so that one usually

finds it more convenient in these quarters to walk in the middle of the street. From some of these shops savory odors greet you ; and you see, exposed for sale, innumerable little fishes, from three to six inches long, all steaming hot from the fat kettle ; or perhaps, I should say, the olive oil kettle. One sees also for sale many hot cakes about three inches in diameter, which are fried in a similar manner. These are very light, and when eaten with honey form a breakfast dish fit even for an American.

The Greeks of the lower classes live in a very simple and frugal manner. Their earnings are small, laborers receiving not more than twenty-five or fifty cents a day. Many of the houses, especially in the country, consist of only one room, which is used alike as parlor, dining-room, kitchen, and sleeping room for the family. The majority, perhaps, have not more than two rooms. People generally have no fire (they go out of doors to get warm) except what is needed for cooking purposes, and that is extremely little, as bread is always bought, and the poorer people live mainly on bread and olives ; in Athens, no doubt, eking out their scanty meal with some of the little fishes or hot cakes so freely exposed for sale. Cheese is also a favorite article of diet, and macaroni is much used. The olives are different from those generally seen here, being left on the tree till they are quite ripe, *i. e.*, black. They are then packed down in salt, and in a month or so are ready for eating. They then present the shrivelled appearance of a stewed prune, but are much smaller. They seem to be an extremely popular article of food, being very cheap as well as nutritious. The wealthy people live more in ac-

cordance with the French style; ordinary articles of food are of moderate cost, except that beef is very dear, and milk and butter are still more so, as pasturage is poor and very few cows are kept in Greece. Indeed, in the rural districts, it is impossible to get any beef or butter at all, and sheep's milk is the best obtainable. In Athens the hotels are well supplied with comforts both for the outer and inner man ; but in making an extensive tour in Greece, one must be prepared to undergo various privations.

The people are extremely ambitious, and the youth are eager to learn. The small boy does not have to be driven to school, but is anxious to acquire knowledge. As a result the Greeks are the best educated people in the world, not that they have so many eminent scholars, but they have a smaller percentage of illiteracy than any other nation, even Germany, can show. There are numerous public schools and gymnasias scattered all over the country, and Athens boasts of a fine University, organized on the German system, with faculties of theology, law, medicine, and philosophy. It has also a school of chemistry and pharmacy, an observatory, and a library of one hundred and fifty thousand volumes. About three thousand students are enrolled and there is a large faculty. Adjoining the University is the Academy of Science for the accommodation of Greek and foreign savants. It is built of Pentelic marble, in the Ionic style of architecture, with colonnades and sculptured pediments. It is adorned with painting and gilding after the ancient style, and the effect is certainly charming under the brilliant blue sky of that region. In the central pediment, there is

a group of marble statues representing the birth of Athena. while the gables on the right and left are adorned with statues in terra cotta. Athena and Apollo surmount the lofty Ionic columns in front, which are not in the Greek style, while sitting figures of Socrates and Plato adorn the entrance.

Churches are numerous in Athens, and an old Byzantine church of the eleventh century stands in the middle of Hermes Street. The ceremonies of the Greek Church do not, to the unintelligent observer, differ very greatly from those of the Roman Catholic, though the edifice itself is adorned with paintings, but never with sculpture. In belief, there is considerable diversity, and more sympathy exists between the Greek and English churches than between the Greek and the Roman Catholic. The parish priests marry, though not a second time, and when one is promoted to a bishopric, his wife must be put away. A fact of some interest, perhaps, especially to Baptists, is that the Greeks practise immersion only as baptism, as they have done since the dawn of Christianity.

The people cannot be said to be very religious or spiritually minded, but it is considered a matter of disloyalty to the State not to support the State religion, and the Greek field is for that reason a very difficult one for foreign missionaries. Moreover, as the New Testament was written in their own language, they naturally think that they do not stand in need of instruction from outside barbarians.

The language spoken, both in Church services and by the people generally, is of course modern Greek. The ancient language was fully developed before the

dawn of history, and contrary to the impression of many it has lasted to the present day. It is therefore a mistake to speak of the Greek as a dead language, like the Latin. Of course there has been a gradual growth and change, but the difference between Modern and New Testament Greek is hardly so great as between that and classical ; much less than exists between the English of the present day and that of Chaucer. The difference in pronunciation, however, is so great that it is often impossible for the classically trained ear, at first, to recognize the most familiar words. There is considerable difference, however, between the written and spoken language, the newspaper and literary Greek being much more like the classical, while the colloquial Greek contains a considerable admixture of Turkish and Italian words. But the Greeks naturally despise the Turks, and are all united in the effort to expel foreign words from their language ; so that it seems probable that they will even succeed in what has been pronounced impossible, in making their language grow backwards.

In fashionable society, however, French is generally spoken. All wealthy people have French governesses for their children, and many Greeks speak German and English in addition. The French fashions in dress also predominate, though some few of the city people and the majority of those in the country have a fashion peculiar to themselves.

Passing from Constitution Square down Amelia Street we shall be very likely to see a steam tram car, which runs from here to Phalerum. Not far from the square we reach Hadrian's Arch or Gate.

To the east of Hadrian's Arch is the Olympieum or Temple of Olympian Zeus.

On our way to the south side of the Acropolis we might pass the choragic monument of Lysicrates, and soon after we should come to the theatre of Dionysus and the Odeium of Herodes Atticus, and so on to the Areopagus, which lies on the northwest side of the Acropolis, a little lower, and quite near to the ancient market place and the busiest portions of the old city.

Somewhat further to the north stands the Theseium, the best preserved edifice in ancient Greece. Though inferior in grace and splendor to the Parthenon, and in beauty and elegance to the Erechtheium, its almost complete preservation causes it to make an extraordinary impression.

Not far beyond and close to the Dipylon Gate, is a spot which must be of absorbing interest to everyone ; an ancient burial ground of the Greeks, formerly the only one known in Hellas, and still by far the most important.

The modern cemetery lies on the opposite side of the city, to the southeast, beyond the Ilissus River. Some of the ancient customs are still preserved, and one day in spring, as in former times, people go out with offerings of cake, wine, and flowers, which they place upon the graves, where they also burn candles. Here the mourners sit, and many of them give way to violent grief, wailing in a perfunctory manner over the death of some member of the family who, as we could observe from the tombstone, had passed away several years before. Others, however, deposit their gifts more quietly. The use of a hearse at funerals is a very

recent innovation. A few years ago the body was borne through the streets on a bier, with the face exposed to view. The mourners walk along near the corpse followed by their friends and neighbors. Several priests in black robes usually head the procession. I suppose that, by the law of contrast, funerals are often associated with weddings.

The Greeks are generally a very friendly, hospitable people, willing to allow strangers the privilege of witnessing some of their peculiar ceremonies. And so we secured the honor of an invitation to attend a wedding, though we had no previous acquaintance with any of the members of the family. The ceremony was to take place at eight o'clock.

Arriving at the house a little before the appointed hour, we were welcomed by the sisters of the bride who escorted us at once into the best room. In the centre of the room was a small table, upon which was soon placed a large salver, bearing a quantity of *confetti* of various colors and sizes, and two wreaths of artificial orange blossoms tied together with long, white satin ribbons. A thin quarto copy of the Gospels, with a cover of heavy embossed silver, also lay upon the table. There were besides two large bundles, done up in white napkins, which excited our curiosity considerably. In the meantime, four priests had arrived attired in their customary dress of long, black gowns, with high black hats on their heads. Soon after, the groom appeared. Next we were astonished to behold the four priests arise, lay hold of the two bundles and from them bring forth their outer garments, gorgeous trappings, in which they proceeded to invest themselves in most undig-

nified haste before the assembled company. Just then the bride came in, quite informally, was introduced to us and spoke to other friends, and then she and the groom took their position in front of the sofa where we had been sitting. The four priests in their colored vestments, and one deacon in plain garb, stood around the little table.

The bride was attired in a silk dress of blue gray and garnet, and wore a veil of tulle which reached the floor. The veil was embroidered with white silk to the depth of a quarter of a yard from the bottom, and was fastened by a wreath of artificial orange blossoms. A spray of the same served as a brooch and others as earrings. She was petite and pretty, a brunette as a matter of course. The groom was a fine looking man of thirty-five or forty years. As they took their places each laid a gold ring upon the silver covered book, and each received a prettily adorned, lighted wax candle, about three feet in length, which they held throughout the ceremony. The service began with chanting by the priests, one reading, the others making responses. The words were uttered rapidly and were, in the main, unintelligible. Sometimes there was reading in an ordinary tone of voice. The first act of especial interest was the taking of the book from the table and presenting it to the couple, touching first the forehead and lips of the groom, then of the bride. This was done three times. Next came the putting on of the ring. The "best man," who is an intimate friend or relative, now stepped forward and, taking the rings, placed one on the little finger of the right hand of each, then changed them back and forth several times, finally leaving them

in their original position, Both parties wore gloves, which were not removed during the ceremony, and immediately afterward, the bride changed the ring from her fourth to her third finger, while the bridegroom transferred his to the other hand. The placing of the crowns upon their heads followed. This was first done by one of the priests. Then the best man took his place behind the bridal pair and moved the crown back and forth from one head to the other three times. The repetitions of these various forms are made in recognition of the Trinity. When the crowns were first placed upon their heads, the guests took up some of the *confetti* from the salver and pelted the bridal couple on the head and shoulders, sometimes hitting other people, and making the air quite lively for a minute.

The next ceremony was the taking of a glass of wine, from which one of the priests first drank. He then held it to the lips of the groom, who took three sips, as did afterward the bride. There was a small loaf of bread upon the table. A part of it is sometimes put into the wine, but this we did not observe. Such is their mode of partaking of the Sacrament. Lastly, one of the priests took the bride by the hand. Her other hand was held by the groom, and he was followed by the best man; and so, hand in hand, they passed around the table three times, being all the time pelted with *confetti* by the guests. After a few closing words, the newly married couple took their seats upon the sofa, the priests proceeded to disrobe and do up their garments, and the service was over. Some of the guests went to the married pair and presented their congratulations; one or two, only, kissed her. Next came in

two servants bearing salvers. On one of these were tumblers containing a chalky looking liquid, which was made of almonds boiled with sugar, and was cool and agreeable to the palate. The other salver bore little frosted cakes, *confetti*, and other kinds of candy, to which each one helped himself in proportion to his appetite. Strange to say the bridal pair were not the first to be served, as with us, but almost the last. We being strangers, were given little lace bags full of *confetti*, an honor not shared by the others. After presenting our congratulations we withdrew.

We attended a reception among persons of a different class of society, the genuine Albanian peasantry. On entering we were introduced to a sister-in-law, who acted as hostess, and were then presented to the bridal pair, who were seated in state upon the sofa. The bride, a young and lovely brunette, wore a garment made of heavy homespun cotton, with solid silk embroidery around the bottom—red, blue, green, and other colors—more than half a yard deep. Above was a little jacket of the same material, the sleeves of which were heavily embroidered with gold braid, and presented an appearance of great richness and elegance. Over this was a sleeveless garment somewhat longer, and slashed at the bottom, forming lapels. It was of heavy, white felt, trimmed with crimson silk braid. Upon the head of the bride was a little skull cap of bright yellow silk, and fastened to this with gold pins was a veil of straw-colored gauze about a yard in length, which had a gold fringe several inches deep around the bottom. Her hair hung down her back in two braids. Large silk cords were braided in with her hair, and

from each plait depended a heavy silk tassel. Upon her head was also a decoration of gold coins, which hung down upon her forehead, and similar, though larger, gold ornaments formed an elaborate necklace. Silver bracelets on her arms completed her toilet. Her husband was dressed in a corresponding Albanian garb. The most striking part of this attire is a white skirt, often measuring fifty yards in circumference, so full that it stands out as if from crinoline. This skirt does not reach to the knee, and it gives the wearer the appearance of a ballet girl. Below this skirt appears a cream white garment, and below the knee the limbs are sometimes encased with leggings of leather, broadcloth, or crocheted worsted. Low, pointed shoes or slippers covered his feet. Over his shoulders was a jacket of fine felt or broadcloth, with sleeves consisting of uppers only, undersleeves showing below. The jacket was also open in front, and showed a spotless shirt; and a little cap adorned his head. In a few moments a woman brought in a tray upon which were several glasses of water, with spoons, and a tumbler of jelly. The guest is expected to take a spoonful of jelly and a glass of water, eat the jelly and drink as much water as he chuses; then place the spoon in the glass, and return it to the salver.

The sisters of the bride said that she would continue to wear the Albanian costume for a year or two; then she will subside into third rate European dress, abandoning the picturesqueness of her native garb.

This variety of costume gives a certain interest and charm to the streets of Athens. When we first went to Athens it was about the time of the enrollment of

soldiers for the proposed war, and the streets presented an unusually animated appearance. Besides the European garb three others were seen. One of these was a soldier's uniform, one the Albanian dress, and another, a peculiar costume, is always of dark blue ; a closely fitting jacket and trousers, which are really a skirt gathered in closely below either knee, leaving the rest as a full bag. Long blue stockings and low shoes generally complete this outfit.

It is certain that some of the modern Greeks bear a strong resemblance to the ancient, and we cannot but feel gratified that the majority of archaeologists are now agreed that they rightly claim inheritance from the ancient Hellenes. In looks, in bearing, and in mental qualities they undoubtedly display many of the characteristics of their distinguished progenitors.

Within the last thirty years the advancement of the people and the development of the resources of the country have been so rapid that we may reasonably feel confident that the Greek nation will become an important factor in Eastern civilization.

BANTU NOTES AND VOCABULARIES.

BY

HELI CHATELAIN, LATE U. S. COMMERCIAL AGENT AT LOANDA,
WEST AFRICA.

No. I.

THE LANGUAGE OF THE BASHI-LANGE AND BA-LUBA.

INTRODUCTORY NOTES.

BIBLIOGRAPHY OF LUBA.—When Dr. Cust published his "Modern Languages of Africa" in 1883, it was thought that no specimens of the language spoken by the Bashi-lange and the Ba-luba had yet appeared in print. Dr. Max Büchner had collected one hundred words; but his vocabularies are still in manuscript. Dr. Pogge had jotted down a few words in his diaries, and they were published after his death by the African Association of Berlin, in their "Mittheilungen," but many of the words given as Luba were in reality Kioko. The vocabularies of Ki-rúa collected by Cameron and Stanley were not mentioned by Dr. Cust under the head of Luba, because the identity of Luba and Rúa was not yet surmised. In fact Dr. Cust placed Luba and Rúa (Ki-rúa)* in two different sub-branches. In 1888, the joint work "Im Innern Afrika's," by Dr. L. Wolf, Wiss-

* Another list of Rúa words was published in the "Polyglotta Africana Orientalis" of J. T. Last, London, 1885 (S. P. C. K.).

mann, etc., contained a list of poorly transliterated Luba words and sentences, which Dr. C. G. Büttner utilized for an able grammatical note published in the April number, 1889, of the "*Zeitschrift für Afrikanische Sprachen*." The "*Ethnographia e Historia tradicional dos Povos da Lunda*" (Lisbon, 1890) of H. de Carvalho has a few words of Luba and of the dialect spoken by the Tukuruba (that is, the Tu-ruba), who are the western Bashi-lange, and pay tribute to the Muata Yamvo, or Muatiamvua, of Lunda (Runda). All the preceding specimens of the language consisted simply of lists of words. The first reliable account of Luba appeared in the "*Notes on Chi-luba, as spoken in Garenganze*," Bath, 1892, by Chas. Alb. Swan, a lay missionary who had lived several years in the southern part of the Luba field, and who traversed it in its whole length when he returned to England by way of the Lomami, Kassai and Kongo. This neat little work of 63 pages contains a grammatical sketch, English-Chi-luba and Chi-luba-English vocabularies, and six chapters of John's Gospel. It is to be hoped that time and means may be found to edit and publish the manuscripts left by Dr. R. W. Summers, who made the most thorough study of Luba, as spoken by the Bashi-lange around Luluaburg.

PLACE AND AREA OF LUBA.—African terminology suffers from a lamentable confusion in the understanding and use of the words—race, nation, state, language, tribe, dialect, king, chief, etc. Correct ideas and correct statements are impossible, so long as writer and reader are not agreed as to the limits of each term. The definitions adopted in these notes are best illustrated

by application to a European and an African case. If we take the state of Austria, called an empire, we find it to be composed of various racial stocks and nations, speaking different languages and dialects, and professing a variety of religions. The Austrian nation proper is racially of Teutonic or Germanic stock, and speaks the German language (literary) as well as a number of dialects, which are mutually intelligible. The Czechs of Bohemia on the north and the Croats on the south are racially and linguistically of Slavonic stock, but they speak two different languages (literary) and a number of dialects of these languages. The Hungarians belong to a third racial stock and speak a language (literary) and dialects which are independent of both the Germanic and Slavonic linguistic stocks. In Africa, if we take the Lunda (Runda) state or empire, we find it composed of various nations, all of the Bantu stock of the negro race, but speaking each its own language (not yet literary) in a variety of dialects, and each nation sub-divided into tribes, sub-tribes, clans and minor sub-divisions; few nations having a king or head-chief, but each tribe being under a chief, each sub-tribe under a chieftain, and each clan under a head-man. Thus the Lunda nation, whose head-chief is at the same time king or emperor of the whole state, occupies only a part of the Lunda State, and is composed of various tribes and sub-tribes having their own chiefs, and speaking their own dialects. The same is the case with the Kioko, and other minor nations which recognize the suzerainty of Muata Yamvo. They all speak their own languages in several dialects, have their own head and sub-chiefs and follow their own na-

tional and tribal customs, though parts of one empire.

Passing now to Luba, there is no Luba state or kingdom; but there is a Luba nation, composed of all the tribes speaking dialects of the Luba language. This language only exists in the general unity of the phonology, grammar and word-store of the dialects which are mutually intelligible. As soon as a written literature develops, the impossibility of printing books in every dialect compels the writers to confine themselves to one dialect, which forms the basis of the book language. The latter, by accessions from dialects, sister languages, and loan words or idioms from foreign literatures, necessarily departs more and more from the fundamental dialect, and this can only become the general language by sacrificing part of its individuality, if not its independent existence.

It is probable that the Christian missions at the two extreme wings of the Luba field, in Katanga and in Bashi-lange Land, will develop the two dialects of their respective districts, but when they shall meet in the centre these first transitory forms will no doubt blend into a general literary medium of the whole nation.

The present knowledge of Luba is too scanty and superficial for an enumeration of the dialects composing it and a precise delimitation of their fields. All that a comparison of published and unpublished vocabularies, and the oral and written testimony of natives as well as travellers, have thus far concurred in establishing, is that, roughly speaking, *the vast triangle between* (1) *the confluence of the Kassai and Lulua*, (2) *Nyangwe*,

(3) *Katanga or Garenganze, is occupied by one great nation, speaking practically one language.* This triangle comprises Bashi-lange and Ba-luba Land, U-rúa and Katanga. It lies entirely within the Kongo State's sphere of influence. The two extreme portions, Bashi-lange Land and Katanga (Garenganze), have been subdued by the power of the State's arms and they are held by State garrisons ; but the whole of Katanga and U-rúa, that is, the Lualaba basin as far as Nyangwe, has been conceded to the Belgian Katanga Company. There can be no doubt, however, that as soon as civilization shall have enlightened these millions of intelligent natives the national spirit will assert itself, and they will take care of themselves and their homeland without the "protection" of greedy foreigners.

Comparative grammar shows that in structure Lu-ganda is almost identical with Luba and that both must have the same origin ; but it also shows that the word-store differs enough to warrant the formation of two separate literatures. Both Luba and Lu-ganda must be counted among the primitive forms of Bantu speech. As the Regga and Nywema vocabularies show these tongues to belong to one group with Luba and Lu-ganda, while the physical characteristics of all these tribes and nations seem to be the same, further investigations may demonstrate the existence, between the Victoria Nile, the Middle Kassai and Lake Bangweolo, of a remarkably pure, compact and powerful branch of the great Bantu stock. The language of the Ba-songe, though very closely allied to that of the Bashi-lange, appears to differ more than a mere dialect

while that of Kanyika (Kanyoka or Kanyuka) may prove to be simply a dialect of Luba.

HISTORY OF THE BASHI-LANGE.—According to Wissmann,* quoting native tradition, the Bashi-lange are the result of the mixture of aboriginal Ba-tua with Ba-luba intruders, who, like the founders of the Lunda state, came from Kasongo's kingdom in the Lualaba basin.† This invasion and mixture would account for the great variety in the physical appearance of the Bashi-lange, for their characteristic tattooing, and for the dispersion of the Ba-kete, who are now found to the south, north and north-east of the Bashi-lange. Kapuku, the Muluba, was the name of the invader.

When Pogge and Wissmann came in contact with the Bashi-lange, they found that Mukenge was the principal chief, but that Chingenge had recently made himself practically independent of him. Mukenge belonged to the clan of Kashia, Chingenge to that of Chidimba. The two predecessors of Mukenge, Kishimbi and Kasongo, had died away from home, on a friendly expedition to the Kioko tribe. Chingenge had succeeded

* "Unter Deutscher Flagge quer durch Afrika," 1889, p. 96.

† Therefore from the east. The statement that they came from the west must be a misprint. We also think it improbable that the first inhabitants, with whom the Ba-luba intermarried to such an extent as to form a new mixed type, were the Ba-tua pygmies. It would seem more natural to suppose a blending with the Tu-kongo or the Ba-kete, who were agricultural Bantu like the Ba-luba. Nomadic hunters, like the Ba-tua, had room enough to move out of the way of a conquering Bantu tribe without being compelled to settle down and mingle with another race. The fact that the Bashi-lange are to this day wedged in between the Ba-teke indicates that these occupied their present site at the time of the invasion, and that they furnished the substratum for the formation of the Lange (Bashi-lange) type. The possibility of the admixture of some Ba-tua blood is not excluded.

to Kabasu-Babu, who is said to have been a great grandson of Chidimba.

Although Bashi-lange slaves had long before drifted to Angola, and the semi-civilized Mbaka people knew of the strangely carved (tattooed) people to the north of their Lunda neighbors, Europe was ignorant of that interesting tribe until Pogge and Wissmann, so to say, discovered them in 1881-82. Yet they were not the first white men to visit the country, for the famous Portuguese trader, Silva Porto, who preceded Livingstone on the Zambesi in Ba-rotse Land, had also forestalled them in Lubuku.

What distinguishes the Bashi-lange among all African tribes is their so-called Diamba-worship, which revolutionized the whole tribe and paved the way for the introduction of Christianity and civilization. The following account of how this institution came about, and how the ground was prepared for German and Belgian exploration is largely drawn from "O Lubuco" (Lisbon, 1889), by H. de Carvalho.

When Livingstone crossed the Kioko (Kiokwe or Chibokwe) territory in 1854, the Ma-kioko (or Machyoko) had not yet settled anywhere north of latitude 10° S. Armed with flint-locks, which they obtained from Benguella *via* Bihe (Oviye), they had become expert elephant-hunters, and followed the retreating elephants toward the north, down the Chikapa valley. As their wives and children accompany them on their expeditions, they easily change their habitat, and so a few years later they had reached the 9° S. lat. The establishment of the Portuguese traders Carneiro and Saturnino Machado at Mona Kimbundu, where

the Ma-kioko could readily exchange their ivory for fresh supplies, had probably a determining influence on this northward move.

As subjects of Muata Yamvo, the Ma-kioko did not care to extend their expeditions too near their rapacious suzerain; so they followed the Chikapa, on the western extremity of the Lunda State. It did not take them long to reach the confluence of the Chikapa and Kassai, where they found themselves in the territory of Mai Munene, chief of the Tu-ruba, cousins of the Bashi-lange who inhabit the right bank of the Kassai. Until the advent of the Ma-kioko, the Bashi-lange had lived so removed and isolated from West and East Coast influences that they had no guns nor any idea of the commercial value of ivory and india-rubber. The Kioko chief Kilunga (alias Mukanjanga), a customer of the Portuguese firm of Mona Kimbundu, sent messengers across the Kassai, and established friendly relations with Kishimbu,* the principal chief of the Bashi-lange. The introductory present sent by Kilunga contained a gun and a keg of powder, accompanied by a message announcing that with these things the elephant could be killed without having recourse to traps, as was the custom of the Bashi-lange. Astonished at the sight of the present, and at the accounts of what the gun could do, Kishimbu arranged for an interview with Kilunga, who met him on the right side of the Kassai. Not only did Kilunga show his new friend how to use the gun in hunting, he also taught him how to smoke diamba,† and

* Called Kishimbi by Wissmann.

† *Diamba, liamba or riamba* is the *Cannabis sativa*, a kind of hemp, which is smoked in the *mutopa*. The effect is similar to that of opium and hashish.

told him wonderful stories about the white men and their riches. On his second visit to Kishimbu, Kilunga was accompanied by two Mbaka men of Angola who were tailors by trade. Kilunga failing to reappear in 1871 and '72, the Bashi-lange began to feel keenly the want of the white man's manufactures.

About that time Kishimbu, under the effect of *diamba*, dreamt that he had gone to the white traders, seen all their wealth and made good bargains with them, and that they afterwards visited his country, to which they brought goods far surpassing anything his Kioko friends possessed. This suggestion of the dream was carried into effect.

With an ample supply of ivory and maidens, which were the two articles in greatest demand among the Ma-kioko, and leaving their bows and arrows at home so as to avoid all warlike appearance, Kishimbu set out with a large retinue in quest of the white man. He followed Kilunga's route along the Chikapa, and managed to pass Mai Munene. At Mona Kongolo's he met Kashabala* and Antonio Bezerra Lisboa, two native traders of Mbaka (Ambaca). Antonio Bezerra guided Kishimbu to Kilunga's camp at Lufi, and to Saturnino's house at Mona Kimbundu. Both Saturnino and Kishimbu were delighted with the bargains they made, and from that day dates the opening of Bashi-lange Land to European commerce. The fame of the new ivory and rubber field spread like wild-fire,

* Kaxibala (Kashibala) or Kaxabala is the Mbaka equivalent of the Portuguese name Gaspar. The regular name of this Kashabala is Manuel Silva da Costa. Joannes is another name by which he goes in the interior. Caxavalla is a Portuguese spelling of Kashabala.

and caravans of I-mbangala from Kasanji, of Mbaka traders supplied from Loanda, and of Bihe traders supplied from Benguella, soon followed in the footsteps of their Kioko competitors.

On his safe return, loaded with the white man's things, Kishimbu ascribed his good fortune to the inspiration of diamba-smoke. He advised all his people to adopt diamba smoking as a national custom, and to follow the inspirations received under its intoxicating influence as divine oracles. All those who were anxious to obtain the wonderful goods of the white men responded with eagerness, and constituted the new sect and political organization of Lu-buku, *i. e.*, Friendship.

In obedience to diamba oracles, the old customs were forsaken, and a new era of peace, material prosperity, and general happiness was proclaimed. The old weapons and fetish charms were thrown into the rivers as useless things; bloodshed, even that of animals, was discountenanced; the former diet and costume were transformed; all strangers declared to be friends, foreign articles eagerly bought up, and civilized ways imitated with great enthusiasm.

Probably the ablutions connected with the rites of the diamba cult were due to Mbaka accounts of the Christian baptism.

The new religion, if such it may be called, did not please the conservative portion of the Bashi-lange, and so the nation was split into two parties: the adherents of the diamba brotherhood, calling themselves Bena-diamba, and the adherents of the old order of things, called Chi-pelumba.

Kishimbu, as founder of the new order, took the title

of Mukenge and became paramount chief of the Bena-diamba. He died in 1873, when on a visit to Kilunga. He was succeeded in the new office of Mukenge by his brother-in-law, who is the present ruler of the Bashi-lange and vassal of the Kongo State. This Mukenge II. allowed the traders to establish markets at Kabau, on the left bank of the Lulúa River, and at Kapuku on the Muansangoma, in 1876.

In 1875-76 Dr. Pogge, who intended to cross the continent, reached Mussumba, the residence of the Muata-Yamvo of Lunda, but was not allowed to penetrate further east. In 1877, Otto Schütt, also commissioned by the German African Association of Berlin, still bent on passing beyond Muata-Yamvo's capital, was induced by his Portuguese and native advisers to take a northeastern route. This would have taken him to Lubuku, the El-dorado of his native guides and porters; but meeting with some opposition at Mai Munene's, he, like his predecessors, returned to Malange without having attained his object.

He had barely left Mai Munene when Silva Porto, with an immense caravan of Biheans, arrived there, crossed over to Lubuku, where he found several Mbaka men settled at Mukenge's capital, and passed on to lat. 5° N., he being the first white man the Bashi-lange ever saw in their country.

In 1881 Dr. Pogge, accompanied by Lieut. Wissmann, reappeared in Malange, still resolved to realize his original plan of crossing the continent by way of the Lunda country. When he arrived at Mona Kimbundu, Saturnino Machado informed him of the unsettled state of affairs in Lunda, where the marauding

Ma-kioko were making trade unsafe, and persuaded him to explore Lubuku, where he would be well received, and from where he might reach Nyangwe, and thence the East Coast. The experienced Kashibala, Saturnino's interpreter, joined Pogge's expedition, which had already secured Germano, another civilized native of Malange. In October, 1881, Pogge and Wissmann made their ingress in Bashi-lange Land, led by Chingenge, whom they had met on the Kassai. Both chiefs, Mukenge and Chingenge, vied with each other in receiving the white men as semi-gods to whom nothing could be refused. A prophecy that the chiefs Kishimbi and Kabasu-Babu, who had died away from home, would one day return from the spirit-world and bring perfect happiness to their subjects and kinsmen, was declared to be verified in the advent of the two white men, Pogge being Kishimbi and Wissmann Kabasu-Babu. Of this belief of the natives the two explorers were not slow to take advantage.

Mukenge, with hundreds of his men, accompanied his white friends to Nyangwe on the Lualaba, where Tippo-Tip provided Wissmann with the means to reach Zanzibar in comfort. Pogge returned with Mukenge to the Lulúa and stayed with him until 1883, when his failing health compelled him to return to Loanda, where he died on March 17, 1884.

At Malange he had met Wissmann, who was on his way to the Bashi-lange at the head of the greatest expedition that ever appeared in that region, this time in the service of Leopold II.

Previous to Wissmann's arrival at Malange in January, 1884, Saturnino Machado and his partner, A.

Lopes de Carvalho, also called João da Catepa, had left Malange for Lubuku (November, 1883), with a caravan of 1200 porters and a host of petty Mbaka traders travelling "in their shadow" (native parlance). This expedition opened a new, direct route to Lubuku, passing Hadi and Ma-shinji Land and crossing the Lovua to the north of Kaungula. Saturnino finally settled at Kapuku on the Muansangoma (February, 1884).

In July, 1884, Wissmann's expedition started from Malange and arrived at Mukenge's in November. Having properly organized Luluaburg station for Leopold II., who had recognized its importance as a strategic point, and having started his white associates in their several departments of work, Wissmann, again accompanied by Mukenge and numbers of his people, accomplished his memorable descent of the Kassai, thus proving its navigability down to the confluence with the Kongo.

Meanwhile the African Congress of Berlin had constituted the Kongo State, and in the delimitation of its boundaries had drawn a straight line through Mukenge's domain, the northern part of which was included in the sphere of the State.

In November, 1885, Mukenge re-entered his kingdom, having been brought back by Dr. L. Wolf and L. Bateman of the Kongo State gendarmerie, who established a new station at the confluence of the Luebo and Lulua rivers, six days' journey from Luluaburg.

On October 17, 1886, an American missionary, Dr. W. R. Summers, the apostle of the Bashi-lange, arrived from Malange at Luluaburg, where he labored amid

great difficulties and hardships until relieved by death on May 24, 1888.

Luluaburg was revisited by Wissmann in 1886-87, on his second crossing of Africa.

Since then great changes have taken place. With his Zanzibar soldiers, armed Angolans and cannon, the representative of the Kongo State soon became the real king of the land, which was organized into a district and subjected to the many laws and regulations of the State. As might be expected, it did not take long for Mukenge and his people to incur the displeasure of the State. Mukenge's town of about 5000 inhabitants was destroyed, and his power broken.

By the last agreement between Portugal and the Kongo State all the Bashi-lange and Ba-luba with half of Lunda have been included in the State. A Catholic Belgian mission has been established at Luluaburg. An American Presbyterian (South) mission, led by S. Norwell Lapsley, has settled in the territory of the Bakete, on the outskirts of the Bashi-lange (1890) at Luebo.

This place is now an important trading station with French, Belgian and Portuguese firms.*

The era of peace and friendship introduced by the diamba cult has been followed by dissensions, bloodshed, slaver raids, and native anarchy; and the debilitating properties of diamba have made havoc in the Bashi-lange's physical constitution.

With the complete establishment of a regular government and the inflow of missionaries order will no

*Additional information can be found in "Life of S. N. Lapsley" (Richmond, Va., 1893), "The Ascent of the Kassai" by L. Bateman, New York, 1889, and in the Belgian journals devoted to the Kongo State.

doubt soon be restored, and peace, prosperity and steady progress realize to some extent the prophetic visions of happiness which thrilled the early founders of the Lubuku brotherhood.

INFORMANTS.—J. WILLIAM RICHARD SUMMERS, M.D., was born in Guernsey, Channel Islands, April 28, 1855. He became a printer, then a conjuror and circus agent, wandering through the length and breadth of the United Kingdom. After his conversion, he came to America in 1879; labored as captain in the Salvation Army; studied in Pennington Seminary, N. J., and graduated with honors from the New York University Medical College (1884). Having given his life to missionary work in Africa, the reading of Pogge and Wissmann's reports induced him to choose the Bashi-lange as his first and principal field of labor, and he succeeded in winning Bishop W. Taylor of the Methodist Episcopal Church to his plan. In Oct., 1884, he sailed with the writer for Liverpool; visited Berlin, where the unpublished journals of Pogge and Wissmann were perused; and on Jan. 7, 1885, he embarked in Liverpool with Bishop Taylor and the writer for Africa. Landing in due time at Loanda, he proceeded to Malange, where he labored successfully as a self-supporting missionary for not quite one year. In 1886, he left Malange with an outfit largely furnished by a grateful native trader, and reached Luluaburg in October. There he built two houses for the missionaries whom he expected to join him soon; he studied the native languages, and did good service as a physician; but waited in vain for recruits and supplies. He died near Luluaburg on May 24, 1888, and was buried in his grounds at Chin-

yama. According to his express desire, his manuscripts passed into the writer's hands. His ethnologic collections and effects were taken by the State people.

II. MUSULU.—In the spring of 1890 I travelled from Loanda to St. Vincent, Cape Verde Islands, in the Portuguese steamship "Africa." Among my fellow passengers were about 150 so-called contract laborers, destined to the coffee and cocoa plantations of S. Thomé. Most of them had been embarked at Benguella and Novo Redondo ; a considerable number also at Loanda. Those embarked at Benguella were, as a rule, reduced to skeletons, having marched hundreds, and even thousands of miles over the commercial routes of interior Africa before reaching the seaboard. Those shipped from Novo Redondo did not look so starved nor so utterly despondent, for they had come fresh from their homes, within a few days' march of the coast, and they belonged to the sturdy Sele and Sumbe tribes. Among those shipped from Loanda, who came chiefly from Lubolo, the Kuangu valley, and the Lunda country, a youth tattooed all over with artistic designs, and having nobody to talk with, attracted my attention. It immediately occurred to me that he might be a Mushi-lange, and I addressed him with *Moyo!* and the other Kishi-lange words I could remember from the reading of Pogge's journal. The expression of surprise and pleasure which spread over his face verified the correctness of my diagnosis. I called him to my side, and from him I collected the vocabulary which is now put in type. That I could fairly well understand his words, and he mine, although I was ignorant of his language, and he of all but a

few words of Ki-mbundu picked up on the road from Malange to Loanda, testifies to the unity of the Bantu tongues, and to the usefulness, in Africa, of vocabularies, however slim, of even the most distant dialects.

Musulu (river) was the young man's name; his father's, Cidibu; his mother's, Bayimbe. He was a subject of Mukenge Kalamba, and had seen Dr. Summers, whom he recognized from my description of him. He had come with a trading party of Bashi-lange to the land of Kasanji. Being unable to walk from a sore foot, his countrymen left him there in charge of Mbanza Kambolo ka Kitamba, a Ki-mbangala chieftain and trader, who is well known at Malange. This man-stealer sold his guest to a white trader of Malange (for about \$15) who resold him to the agent of a S. Thomé plantation (for about \$70). I had never seen a more gentlemanly native than Musulu, and his eloquent appeals to obtain justice for him moved me deeply. But it was in vain I tried then, and in 1891, when again passing through S. Thomé, to redeem him and restore him to liberty. He is only one among the thousands who work as semi-slaves in the houses or plantations of refined white men, without hope of regaining their liberty or ever revisiting their homes.

THE LANGUAGE OF THE BASHI-LANGE.

GRAMMATICAL SKETCH BY DR. W. R. SUMMERS.*

NAME AND AREA.—This tongue is by the natives called *Mwaku Bashi-lange*,† and is spoken by the people living between the rivers Kassai (or Nzadi) and the Lubi; and whose territories extend irregularly northward to between latitude 5° and latitude 4° S., and southward as far as latitude 7° S. It is also spoken by the Bambwe tribe east of the Lubilash. Dialectical variations are spoken by the Ba-kete, a divided tribe living both to the north and to the south of the Bashi-lange; also by the Ba-songe and the Ba-sange, who live from the Lubi east to the Lualaba, and include the Bena-Koto, Bena-Ki, Bena-Kalebwe, and Bena-Milebwe tribes; and finally by the Ba-luba,‡ an important nation living south of the Ba-songe and Ba sange, north of the A-runda (people of Lunda) or Runda, east of the Bashi-lange, west of the Wa-rúa (or Ba-rúa), and northwest of the A-rungu.

ALPHABET.—The alphabet of the *Mwaku Bashi-lange* consists of five vowels: *a, e, i, o, u* (with the two semi-vowels, *w* and *y*), and sixteen consonants, *b, c, d, f, g, h, j, k, l, m, n, p, s, t, v, z*. There are two semi-diphthongs, *ai* and *oi*. The vowels are pronounced as in Italian; and, with the exception of the letter *c*, the consonants are pronounced as in English. *C* always as *ch* in "church," and *g* as in "go"; *sh* as in "shame"; *ñ* as first *ng* in "singing," and is generally followed by a syllabic vowel: *ng* differs from *ñ* in the *g*

* Arranged by Heli Chatelain.

† In a private letter Dr. Summers once stated that the Bashi-lange had no special name for their language. *Mwaku Bashi-lange* seems too long or awkward for practical use in linguistic books, and needs confirmation. The form *Kishi-lange*, which I use, is formed by the analogy of *Kishi-kongo*, as a parallel of *Bashi-lange* and *Eshi-kongo*. The final name is yet to be found. Dr. Summers wrote *Bashilange* or *Ba-shilange*; but Wissmann states that *Bashi-*, as also *Bena-*, signifies "inhabitants, people of," and I think he is right. *Bashi-* is thus the equivalent of *akua-* (in *Ki-mbundu* and *Lunda*), *ashi-* (in *Ki-mbundu*), *eshi-* (in *Kongo*). The name *Ka-shilange*, plural *Tu-shilange*, given to the *Bashi-lange* by the Angolans, is formed by the prefix of Class X., *ka-*, plural *tu-*. Wissmann says it strictly belongs to the wild *Bashi-lange* living west of the Kassai, who are the *Tu-ruba* of the *Lunda* empire.

‡ Dr. Summers understands here only the northern *Ba-luba*. He was not aware that the *Ba-rúa* were the central *Ba-luba*, and that in *Katanga* was to be found a southern branch of *Ba-luba*. *Rúa*, *Ruba*, *Lúa* and *Luba* are interchangeable pronunciations of the same word.

sound passing over to the following vowel; *ny* is the Portuguese *nh*, French *gn*, and when followed by *i* and forming the last syllable of a word is generally half-suppressed; and if preceded by *a* is often entirely suppressed.

ACCENT.—The accentuation of words is peculiar, being, excepting in names of men, generally on the first syllable.*

ARTICLE.—There is no article, the nouns being, with few exceptions, generic.

CLASSES OF NOUNS.—Nouns are divided into ten classes, each class being distinguished by a noun-prefix in the singular. The plural is generally formed by an entire change of prefix. One class has the same form in singular and plural, and another has no plural form. The form of all dependent words agrees with or depends upon the noun-prefix.

The signification of the different classes is somewhat obscure, though clearer than in many related languages.

Class I. Singular *mu-*, plural *ba-*, is the class of human beings. *Mu-ntu*=person, *ba-ntu*=people. *Mu-lume*=man, *ba-lume*=men. *Mu-kaji*=woman, *ba-kaji*=women.

Class II. Singular *mu-*, plural *mi-*, or *nyi-*, is the class of the vegetable kingdom, *mu-ci*=tree, *mi-ci*=trees, but it also includes many things of more than ordinary importance, as *mw-edu*=beard, *my-edu*=beards. *Mw-ito*=forest, *ny-ito*=forests. *Mu-twe*=head, *mi-twe*=heads.

Class III. Singular *ci-*, plural *bi-*, is the class of things in general and most things formed by man. *Ci-ntu*=thing, *bi-ntu*=things.

Class IV. Singular *di-*, plural *ma-*, is the class of very important things. *Di-cu*=ear, *ma-cu*=ears. *Di-fu*=stomach, *ma-fu*=stomachs. *Di-no*=tooth, *me-no*=teeth.

Class V. Singular *bu-*, plural *ma-*, is the class of nouns incapable of number, of which solids are generally in the singular form and liquids in the plural. Nearly all abstract nouns belong to this class. *Bu-nana*=friendship, *bu-lelela*=truth, *bu lulu*=bitterness, *bw-anda*=cotton, *bu twe*=ashes, *bu kula*=flour; *ma-i*=water, *ma-nyi*=oil, *ma shi*=blood, *ma-sha*=wrath. Instruments of locomotion: *bw-anda*

* This would be novel in a Bantu tongue. Probably the first syllable of the stem is meant, in which case the accent would follow the same law as in the Kongo cluster, differing therein from the Ki-mbundu and U-mbundu clusters, which prefer or require the accent on the penult, irrespective of stem.

—tipoiā (riding-hammock), *m anda*—tipoiās, *bw-ato*—canoe, *m-ato*—canoes. Relationship: *bw-ana*—brother or sister, *m-ana*—brothers or sisters. Nouns like *bu-tuko*—night, *ma-tuko*—nights.

Class VI. Singular *lu-*, plural *n-*, is the class of things more or less round, bent or empty. Also of some abstract names of bad things. *Lu-kano*—armlet or anklet, *kano*—armlets or anklets. *Lu-ala*—claw, *ng-ala*—claws. *Lu-fu*—death. The *n* of the plural undergoes a number of changes according to the first letter of the stem.

Class VII. Singular *pa-*, plural *n*,* is the class of words in which “place” is the prominent idea. *Pa-mbalo*—place, *mbalo*—places. *Pa-mbelo*—doorway, *mbelo*—doorways.

Class VIII. Singular *ku-*, no plural as yet found, is the class of infinitives used as substantives, some abstracts from verbs, and a few locative nouns. *Ku-fwa*—dying, or when used with a personal possessive pronoun, death. *Ku-lombe*—beggary. *Ku-mutwe*—source. *Ku-shiŋu*—shirt or coat collar.†

Class IX. Singular and plural *n*,* is the class of the animal kingdom. In the plural the first vowel is lengthened. *N-yama*—animal, *n-yaama*—animals.

Class X.‡ Singular *ka-*, plural *tu-*, is the class of small unimportant things and a few very large things. Diminutiveness, depreciation, etc., is expressed by prefixing a noun from any other class with *ka-* singular, or *tu-* plural, instead of the usual class prefix. When depreciation is intended of something already in this class, *kana* is placed before the noun. *Ka-fumbila*—cap, *tu-fumbila*—caps; *kana ka-fumbila*—a little cap, *tuna tu-fumbila*—little caps. *Ka-pusu*—pimple, from *ci-pusu*—boil. *Ci-lulu*—cloth, *ka-lulu*—small piece of cloth, or poor cloth.

ADJECTIVES.—Adjectives follow the nouns modified, and agree with them by prefixing adjectival prefixes to the adjectival stems.

* Before labials, *b*, *p*, *m*, *v*, *f*, the letter *n* is generally replaced in writing by *m*. This is done to facilitate the reading to foreigners. In reality, if pronounced correctly, and not only approximately, both *m*- and *n*-, when preceding a consonant, represent the same sound, which is the nasal, so important in Bantu phonology.

† *Ku-mutwe* and *ku-xiŋu* are probably not nouns, but locations composed of the preposition *ku*—at, and the nouns *mutwe*—head, and *xiŋu*—neck.

‡ Summers, following other Bantu grammarians, called the class with prefixes *ka-* and *tu-* Class IX. In my own grammatical sketches, and in this, I place it last, because one must know the prefixes of all other classes before he can form a correct diminutive.

A few adjectives serve also as adverbs, but never take prefixes. The adjectival *force* is often given to the preposition—*a* (of) followed by a noun or a verbal infinitive.

NOUN AND ADJECTIVE PREFIXES:—

Class.	N. prefix.	Adj. prefix.	Noun.	Adjective.		Genitive <i>a</i> .
I.	<i>■</i> <i>Mu-</i>	<i>Mu-</i>	<i>Mu-ntu</i>	<i>mu-kole,</i>	a strong person.	<i>wa</i>
	<i>■</i> <i>Ba-</i>	<i>Ba-</i>	<i>Ba-ntu</i>	<i>ba-kole,</i>	strong people.	<i>ba</i>
II.	<i>■</i> <i>Mu-</i>	<i>Mu-</i>	<i>Mu-ci</i>	<i>mu-kole,</i>	a strong tree.	<i>wa</i>
	<i>■</i> <i>Mi-*</i>	<i>Mi-*</i>	<i>Mi-ci</i>	<i>mi-kole,</i>	strong trees.	<i>ya</i>
III.	<i>■</i> <i>Ci-</i>	<i>Ci-</i>	<i>Ci-ntu</i>	<i>ci-kole,</i>	a strong thing.	<i>cya</i>
	<i>■</i> <i>Bi-</i>	<i>Bi-</i>	<i>Bi-ntu</i>	<i>bi-kole,</i>	strong things.	<i>bya</i>
IV.	<i>■</i> <i>Di-</i>	<i>Di-</i>	<i>Di-fu</i>	<i>di-kole,</i>	a strong stomach.	<i>dya</i>
	<i>■</i> <i>Ma-</i>	<i>Ma-</i>	<i>Ma-fu</i>	<i>ma-kole,</i>	strong stomachs.	<i>a</i>
V.	<i>■</i> <i>Bu-</i>	<i>Bu-</i>	<i>Bu-tuko</i>	<i>bu-fika,</i>	a dark night.	<i>bwa</i>
	<i>■</i> <i>Ma-</i>	<i>Ma-</i>	<i>Ma-tuko</i>	<i>ma-fika,</i>	dark nights.	<i>a</i>
VI.	<i>■</i> <i>Lu-</i>	<i>Lu-</i>	<i>Lu-pasa</i>	<i>lu-kole,</i>	a strong cup.	<i>lwa</i>
	<i>■</i> <i>N-</i>	<i>Nyi-*</i>	<i>N-pasa</i>	<i>nyi-kole,</i>	strong cups.	<i>ya</i>
VII.	<i>■</i> <i>Pa-</i>	<i>Pa-</i>	<i>Pa-mbalo</i>	<i>pa-nene,</i>	a large place.	<i>pa</i>
	<i>■</i> <i>N-</i>	<i>Ny *</i>	<i>M-balo</i>	<i>nyi-nene,</i>	large places.	<i>ya</i>
VIII.	<i>■</i> <i>Ku-</i>	<i>Ku-</i>	<i>Ku-dia</i>	<i>ku-impe,</i>	good eating.	<i>kwa</i>
IX.	<i>■</i> <i>N-</i>	<i>Mu-</i>	<i>N-yama</i>	<i>mu-kole,</i>	a strong animal.	<i>wa</i>
	<i>■</i> <i>N-</i>	<i>Nyi-*</i>	<i>N-yaama</i>	<i>nyi-kole,</i>	strong animals.	<i>ya</i>
X.	<i>■</i> <i>Ka-</i>	<i>Ka-</i>	<i>Ka-sulu</i>	<i>ka-kole,</i>	a strong rivulet.	<i>ka</i>
	<i>■</i> <i>Tu-</i>	<i>Tu-</i>	<i>Tu-sulu</i>	<i>tu-kole.</i>	strong rivulets.	<i>twa</i>

NUMERALS.

	ABSOLUTE FORM: Counting on Fingers.	CONCORDING FORM: Counting of Things.
one	<i>y-omwe</i>	<i>-umu.</i>
two	<i>i-bidi</i>	<i>-bidi.</i>
three	<i>i-satu</i>	<i>-satu.</i>
four	<i>i-nai</i>	<i>-nai.</i>
five	<i>i-tanu</i>	<i>-tanu.</i>
six	<i>i-sambombo</i>	<i>-sambombo.</i>
seven	<i>mw-anda mu-tekete</i>	<i>mw-anda mu-tekete.</i>
eight	<i>mw-anda mu-kulu</i>	<i>mw-anda mu-kulu.</i>
nine	<i>ci-tema</i>	<i>ci-tema.</i>
ten	<i>di-kumi</i>	<i>di-kumi.</i>
hundred	<i>lu-kam i</i>	<i>lu-kama.</i>
thousand	<i>ka-nunu</i>	<i>ka-nunu.</i>

* *Mi-* and *Nyi-* are interchangeable, but are oftenest found as above.

CONCORDING FORM.—From 1 to 6 the numeral stem is made to agree with its noun which precedes it, by taking its prefix: *Bi-asa bi-bidi*=two houses.

From 6 on, the numerals are nouns and they govern their nouns by means of the genitive.

POSSESSIVES.—Personal possessives are:—

Singular: *-anyi* my *-ebi* thy *-andi* his or her

Plural: *-etu* our *-enu* your *-abo* their

Personal possessives agree with the nouns they modify by taking the concord. The following is a list of these concords exemplified:

Class		Noun	My	Thy	His, her	Our	Your	Their
I.	S.	<i>Mu-ntu</i>	<i>w-anyi</i>	<i>w-ebi</i>	<i>w-andi</i>	<i>w-etu</i>	<i>w-enu</i>	<i>w-abo</i>
	P.	<i>Ba-ntu</i>	<i>b-anyi</i>	<i>b-ebi</i>	<i>b-andi</i>	<i>b-etu</i>	<i>b-enu</i>	<i>b-abo</i>
II.	S.	<i>Mu-ci</i>	<i>w-anyi</i>	<i>w-ebi</i>	<i>w-andi</i>	<i>w-etu</i>	<i>w-enu</i>	<i>w-abo</i>
	P.	<i>Mi-ci</i>	<i>y-anyi</i>	<i>y-ebi</i>	<i>y-andi</i>	<i>y-etu</i>	<i>y-enu</i>	<i>y-abo</i>
III.	S.	<i>Ci-ntu</i>	<i>cy-anyi</i>	<i>cy-ebi</i>	<i>cy-andi</i>	<i>cy-etu</i>	<i>cy-enu</i>	<i>cy-abo</i>
	P.	<i>Bi-ntu</i>	<i>by-anyi</i>	<i>by-ebi</i>	<i>by-andi</i>	<i>by-etu</i>	<i>by-enu</i>	<i>by-abo</i>
IV.	S.	<i>Di-fu</i>	<i>dy-anyi</i>	<i>dy-ebi</i>	<i>dy-andi</i>	<i>dy-etu</i>	<i>dy-enu</i>	<i>dy-abo</i>
	P.	<i>Ma-fu</i>	<i>anyi</i>	<i>ebi</i>	<i>andi</i>	<i>etu</i>	<i>enu</i>	<i>abo</i>
V.	S.	<i>Bu-tuko</i>	<i>bw-anyi</i>	<i>bw-ebi</i>	<i>bw-andi</i>	<i>bw-etu</i>	<i>bw-enu</i>	<i>bw-abo</i>
	P.	<i>Ma-tuko</i>	<i>anyi</i>	<i>ebi</i>	<i>andi</i>	<i>etu</i>	<i>enu</i>	<i>abo</i>
VI.	S.	<i>Lu-pasa</i>	<i>lw-anyi</i>	<i>lw-ebi</i>	<i>lw-andi</i>	<i>lw-etu</i>	<i>lw-enu</i>	<i>lw-abo</i>
	P.	<i>N-pasa</i>	<i>y-anyi</i>	<i>y-ebi</i>	<i>y-andi</i>	<i>y-etu</i>	<i>y-enu</i>	<i>y-abo</i>
VII.	S.	<i>Pa-mbalo</i>	<i>p-anyi</i>	<i>p-ebi</i>	<i>p-andi</i>	<i>p-etu</i>	<i>p-enu</i>	<i>p-abo</i>
	P.	<i>M-balo</i>	<i>y-anyi</i>	<i>y-ebi</i>	<i>y-andi</i>	<i>y-etu</i>	<i>y-enu</i>	<i>y-abo</i>
VIII.	S.	<i>Kw-dia</i>	<i>kw-anyi</i>	<i>kw-ebi</i>	<i>kw-andi</i>	<i>kw-etu</i>	<i>kw-enu</i>	<i>kw-abo</i>
IX.	S.	<i>N-yama</i>	<i>w-anyi</i>	<i>w-ebi</i>	<i>w-andi</i>	<i>w-etu</i>	<i>w-enu</i>	<i>w-abo</i>
	P.	<i>N-yaama</i>	<i>y-anyi</i>	<i>y-ebi</i>	<i>y-andi</i>	<i>y-etu</i>	<i>y-enu</i>	<i>y-abo</i>
X.	S.	<i>Ka-sulu</i>	<i>k-anyi</i>	<i>k-ebi</i>	<i>k-andi</i>	<i>k-etu</i>	<i>k-enu</i>	<i>k-abo</i>
	P.	<i>Tu-sulu</i>	<i>tw-anyi</i>	<i>tw-ebi</i>	<i>tw-andi</i>	<i>tw-etu</i>	<i>tw-enu</i>	<i>tw-abo</i>

PERSONAL PRONOUNS.—The personal pronouns are:—

Singular: *Meme* I *Wewe* thou *Yeye* he or she

Plural: *Toto** we *Nono** you *Bobo* they

These pronouns are seldom used except when emphasis is desired, their places being taken by pronominal prefixes, which are always used, and are as follows:

M- or *in-* I *U-* thou *U-* he, or she
Tu- we *Nu-* you *Ba-* they

* The forms *twetwe* (we) and *nwenwe* (you) are also used.

In di mu-cibale—I am blind; but *meme in-di mu-cibale*—I (myself) am blind.

ADVERBS.—Adverbs are often made from adjectives, but sometimes by the preposition—*a* (of) (genitive) followed by a noun or an infinitive. *Bimpe* is a general intensitive.

VERBS.—Verbs have *ku-* as sign of the infinitive, and always end in *-a*: *ku-tuma*—to send, *ku-lala*—to sleep. The verb stem is also the second person singular of the imperative: *tuma*—send, or, send thou.

The verb “to be” is sometimes included in the simple verb form, and sometimes represented by the particle *di*, as *In-di nsama*—I am sick, *u-di nsama*—he is sick.

The verb “to have” is formed of the particle *di* with the particle *na*, e.g., *In-di-na*—I have (literally, I am with).

Monosyllabic verbs are often irregular.

Derived forms of the verb are common, some verbs having six distinct forms.

In the present tense *di* is preceded by the pronominal or noun prefix: *in-di*—I am. In the other tenses the temporal particle is inserted between *di* and the prefix: *im-ba-di*—I was. In this case the *n* is changed into *m* owing to the following *b*.

POSITIVE CONJUGATION OF KU-FUTA—TO PAY.

INDICATIVE.

Present.

<i>meme nin-futa</i>	I pay.
<i>wewe u-futa</i>	thou payest.
<i>yeye u-futa</i>	he pays.
<i>toto tu-futa</i>	we pay.
<i>nono nu-futa</i>	you pay.
<i>bobo ba-futa</i>	they pay.

Present Imperfect.

<i>indi ngu-futa</i>	I am paying.
<i>udi u-futa</i>	thou art paying.
<i>udi u-futa</i>	he is paying.
<i>tudi tu-futa</i>	we are paying.
<i>nudi nu-futa</i>	you are paying.
<i>badi ba-futa</i>	they are paying.

Present Perfect.

<i>na-ku-futa</i>	I paid.
<i>wa-ku-futa</i>	thou didst pay.
<i>wa-ku-futa</i>	he paid.
<i>twa-ku-futa</i>	we paid.
<i>nwa-ku-futa</i>	you paid.
<i>ba-ku-futa</i>	they paid.

Past Perfect.

<i>na-ka-futa,</i>	I had paid.
<i>wa-ka-futa</i>	thou hadst paid.
<i>wa-ka-futa</i>	he had paid.
<i>twa-ka-futa</i>	we had paid.
<i>nwa-ka-futa</i>	you had paid.
<i>ba-ka-futa</i>	they had paid.

Future.

<i>ni-ngu-futa</i>	I shall pay.
<i>nu-futa</i>	thou wilt pay.
<i>na-futa</i>	he will pay.
<i>na-tu-futa</i>	we shall pay.
<i>na-nu-futa</i>	you will pay.
<i>na-ba futa</i>	they will pay.

SUBJUNCTIVE.

The subjunctive is formed by changing final *-a* into *-e*.

NEGATIVE CONJUGATION OF KU-FUTA.

Present.

<i>ce-na</i>	<i>n-futa</i>	I do not pay.
<i>kwe-na</i>	<i>u-futa</i>	thou dost not pay.
<i>ke-na</i>	<i>u-futa</i>	he does not pay.
<i>ka-twe-na</i>	<i>tu-futa</i>	we do not pay.
<i>ka-nwe na</i>	<i>nu futa</i>	you do not pay.
<i>ka be-na</i>	<i>ba-futa</i>	they do not pay.

Past.

<i>cena</i>	<i>mw-asa ku futa</i>	I have not (yet) paid.
<i>kwenā</i>	<i>mw-asa ku futa</i>	thou hast not (yet) paid.
<i>kena</i>	<i>mw-asa ku-futa</i>	he has not (yet) paid.
<i>katwena</i>	<i>b-asa ku-futa</i>	we have not (yet) paid.
<i>kanwena</i>	<i>b-asa ku-futa</i>	you have not (yet) paid.
<i>kabena</i>	<i>b-asa ku-futa</i>	they have not (yet) paid.

Past Perfect.

<i>ca-ka-di</i>	<i>mu-fute*</i>	I was not paying, or had not paid.
<i>kwa-ka-di</i>	<i>mu-fute</i>	thou wast not paying, or hadst not paid.
<i>ka-ka di</i>	<i>mu fute</i>	he was not paying, or had not paid.
<i>ka-twa-ka-di</i>	<i>ba-fute*</i>	we were not paying, or had not paid.
<i>ka-nwa-ka-di</i>	<i>ba-fute</i>	you were not paying, or had not paid.
<i>ka-ba-ka di</i>	<i>ba-fute</i>	they were not paying, or had not paid.

Future.

<i>ci-ba</i>	<i>ku-futa</i>	I shall not pay.
<i>ku ba</i>	<i>ku-futa</i>	thou wilt not pay.
<i>ka-ba</i>	<i>ku-futa</i>	he will not pay.
<i>ka-tu ba</i>	<i>ku-futa</i>	we shall not pay.
<i>ka-nu-ba</i>	<i>ku-futa</i>	you will not pay.
<i>ka-ba-ba</i>	<i>ku-futa</i>	they will not pay.

* Literally, I was not (*ca-kadi*) a payer (*mu-fute*); we were not (*katwakadi*) payers (*ba-fute*).

IMPERATIVE.

<i>futa</i>	pay thou.	<i>futa-i</i>	pay ye.
<i>ku-futa</i>	do not pay.	<i>ka-ni-futa</i>	pay ye not.

IRREGULAR VERBS.

For euphony's sake verbs beginning with *l-* (in stem) change *l* into *d* in the first person singular of the present tense: *nindala* instead of *nin-lala*=I sleep, from *ku-lala*=to sleep.

The verb *ku-pa*=to give, and others beginning with *p-* or *b-*, change the *n-* of prefix first person singular into *m-*: thus *nimpe*=that I give, instead of *ninpe*; *indimpa*=I am giving, instead of *indinpa*.

VOCABULARY OF KISHI-LANGE.*

ENGLISH	PORTUGUESE	KI-MBUNDU	KISHI-LANGE
A			
abdomen	barriga	di-vumu	di-vumu
arm, hand	braço, mão	lu-kuaku	di-boko
arms, hands	braços, mãos	ma-ku	ma-boko
B			
back (the)	costas (as)	di-ma	nii-mà
badness, ugliness	maldade, fealdade	ku-iiba	ma-lu-membe
basket-dish	cestinho	ng-alu	ka-paia†
basket-dishes	cestinhas	ji-ng-alu	tu-paia†
to beat	bater	ku-beta	ku-kuma
beauty, goodness	belleza, bondade	mbote	ma-lengela
beard	barba	mu-ezu	mu-evu
bird	ave, passaro	n-jila	ka-niiniu
blood	sangue	ma-niinga	ma-niinga
boat, canoe	canôa	u-lungu, u-atu	bu-atu
bone	osso	ki-fuba	ci-fufua
to break	quebrar, partir	ku-bukula	ku-cibula
breast, teat	peito, mamma	di-ele	di-bele
breasts, teats	peitos, mamas	m-ele	ma-bele
to bring (<i>lit.</i> to send hither)	trazer (<i>lit.</i> mandar aqui)	ku-beka	ku-tuma kunu
bull, cow	boi, vacca	ngombe	flombe
buttock	nadega	di-taku	di-taku

* Collected by Heli Chatelain on steamer between Loanda and S. Thomé. The alphabet used here is that of Chatelain, not that of Summers, hence *x*=*st*, *i*=*y*, *u*=*w*.

† The *p* and the *k* in these and other words were pronounced by Musulu as they are in English, that is, with an audible *k* following the *p* or *k*; not as in the Romanic languages. The pure *p* and *k* of these languages are those heard in Ki-mbundu.

ENGLISH	PORTUGUESE	KI-MBUNDU	KISHI-LANGE
C			
to call	chamar	ku-ixana	ku-bikila
cassava-mush	infundi	funji	ci-ntu
calf of leg	barriga da perna	di-vumu dia kinama	mu-kolo
chain	cadeia, corrente	lu-bambu	lu-kanu
chains	correntes	rua-lu-bambu	ma-lu-kanu
chair	cadeira	ki-alu	n-guaza
chief, king	regulo	soba	mu-kelenge
child (little)	filho, filha (pequeno)	m-ona	mu-ana (mu-teketeke or mu-tekete)
cheek	face	di-tama	di-tama
chest, breast	peito	tulu	ki-adi, or ci-adi
cloth	panno	mu-lele	ci-lulu
cloud	nuvem	di-tuta	ci-xíu
come!	vem!	zá!	lua!
to come	vir	ku-iza	ku-luá*
coat (clothing of arms)	casaco (vestimenta de braços)	ka-zaku	ci-lulu ci-a ma-boko
to cook	cozinhar	ku-lamba, kuteleka	ku-teleka
corn, maize	milho	ma sa pl.	ma-suafia, pl.
to cry, weep	chorar	ku-dila	ku-dila
to cut	cortar	ku batula	ku-koza

D

to drink	beber	ku-nua	ku-nua
drum, tom-tom	tambor, batuque	n-goma	n-goma

E

ear	orelha	di-tue, di-tui	di-cu
ears	orelhas	ma-tue	ma-cu
ear-wax	cera dos ouvidos	u-iji u-a di-tue	tu-iji tu-a mu di cu
to eat	comer	ku-dia	ku-dia
eye	olho	di-su	di-su
eye-lash	pestana	ki-zueue	n-daviu
eye-brows	sobrancelhas	mi-kasu	ma-kiki
elephant	elephante	n-zamba	ka-pumbu
Europe (civiliza- tion)	Europa (civilização)	Putu†	Mbutu†
to evacuate (faeces)	evacuar (excrem.)	ku-nena	ku-niinia

* The grave accent on a final vowel represents a half tone. The last vowel is then pronounced more distinctly than usual and with a rising inflection, but not with the full tonic accent, which precedes.

† The first meaning of *Putu* is Portugal, and by extension White Man's Land in general. The non-Portuguese whites are generally called *i-ngeleji* (sing. *ki-ngeleji*). The Kongo State, when distinguished from European governments, is called *Bula-matadi*, which was Stanley's name among the Kongo people. His name was extended to the State introduced by him.

ENGLISH	PORTUGUESE	KI-MBUNDU	KISHI-LANGE
F			
finger	dedo	mu-lembu	i-nù
fire	fogo	tu-bia	ka-pia
fish	peixe	m-biji	ci-kele
fly	mosca	hamue	ci-ñu
G			
get out !	saia d' aqui !	tunda !	tundubula !
to give	dar	ku-bana, ku-ba	ku-pa
girdle	cinto	ponda	mu-kaba
God	Deus	Nzambi	M-fidi Mu-kulu
goat	cabra	hombo	m-buixi
grass	capim	i-angu	mu-angu
gun	espingarda	u ta	ci-ñoma
gums	gengivas	mu-funiafunia	mu-kuna or mu-kanakuna
H			
hat (<i>lit.</i> clothing of head)	chapeo (vestuario da cabeça)	xapé	ci-vulu ci-a mutue
hair, a	cabello, um	n-demba	n-ionii
half, middle	metade, meio	ka-xaxi, kaci	ka-lánganii
hand, see arm			
heart	coração	pumbulu	pimbi
to hear (<i>See</i> to smell)	ouvir (<i>veja</i> cheirar)	ku-ívua	ku-ívua
hen, chicken	gallinha	sanji	sôlô*
to be high, long	ser alto, comprido	ku-leba	ku-lunda
hippopotamus	hippopotamo	n-guvu	ñi-uvu
hole	burraco	di-kungu	di-kungu
house	casa	i-nzo	n-zubu
hunger	fome	n-zala	n-zala
I			
instep	peito do pé	di-kunda diaki-nama	di-kasa dia ki-lama
insteps	peitos dos pés	ma-kunda ma i-nama	ma-kasa a bi-lama
in, at, on	em, a, de	mu, bu, ku	mu, pa, ku
K			
knee	joelho	ki-puna	ci-nu
knees	joelhos	i-puna	bi-nu
knife	faca	poko	kele
L			
to laugh	rir	ku-elela	ku-zeka
to let go	deixar	ku-cha	ku-lekela

* The letter *ô* represents here a deep, close, and long *o*, sounding like English *u* in "full," but not short. This *ô* is not found in Ki-mbundu, in which the *o* is always open.

ENGLISH	PORTUGUESE	KI-MBUNDU	KISHI-LANGE
L			
leg, foot	perna, pé	ki-nama	ki-lama
lip	beíço	mu-zumbu	mu-lomo
lips	beíços	mi-zumbu	mi-lomo
liver	fígado	mu-cima	mu-cima
M			
man, male	homem	di-iala	mu-lume
men	homens	m-ala	ba-lume
manioc, cassava	mandioca	ki-dingu	ci-ombe
meat, flesh	carne	xitu	mu-iniinii
mouth	bocca	di-kanu	di-kanua
moon, month	lua, mez	m-beji	koci
much, many	muito, muitos	-avulu	-ingi
N			
to name, call	chamar, dar nome	ku-luka, ku-ixana	ku-bikila
nail (of brass)	tacha (d'aramé)	fuma	fuma
nail (finger)	unha	ki-ala	ci-ala
nails	unhas	i-ala	bi-ala
navel	umbigo	ngombo	mu-tutu
navels	umbigos	ji-ngombo	mi-tutu
neck	pescoço	xingu	xifu
no	não	ka-na	na-xi
nose (back of)	nariz (exterior)	di-zulu	di-lù
nostril	venta	di-zulu, di-zunu	di-zulu
nostrils	ventas	ma-zulu, ma-zunu	ma-zulu
O			
only, in vain, unjustly	só, de balde, sem rasão	ngó, ngoho	tupu
P			
paddle	pá (de canôa)	hafi	mu-bambu
to paddle	padejar, remar	ku-vudia	ku-kuba
parasol	parasol	xapediniu	di-kumbi
parrot	papagaio	ka-pakaiu, ka-koso	ka-kusu
pipe	cachimbo	pexi	mô-zua
pig, hog	porco	n-gulu	n-gulubê
to pinch (<i>lit.</i> to scratch nail)	beliscar (çoçar unha)	ku-ta ki-njoto	ku-ania ci-ala
plate	prato	di-longa	ci-engá
to push	empurrar	ku-pula	ku-tongojola
R			
to remove	tirar	ku-katula	ku-anata
ring (<i>See</i> chain)	anel (<i>veja</i> cadeia)	lu-bambu, selu	lu-kanu
rope	corda	mu-kolo	mu-kudi

ENGLISH	PORTUGUESE	KI-MBUNDU	KISHI-LANGE
S			
sky, heaven	céu	di-lu, di-ulu	di-lù
skin	pelle	ki-konda, ki-ba	mu-bidi
to scratch	coçar	ku-aza	ku-ania
to seize, hold	pegar	ku-kuata	ku-kuata
to sit	sentar-se	ku-xikama	ku-xikama
to sleep	dormir	ku-zeka	ku-lala
sheep	carneiro	m-budi	mu-koko
shade	sombra	ki-lembeketa	di-ngidi
shoulder	hombro	ki-suxi	ci-kepakepa
to be small	ser pequeno	ku-tola	ku-teketa, or, teketeke
smoke	fumo	di-xi	mu-ixi
to snuff	tomar rapé	ku-fenia	ku-buita
sole of foot	planta do pé	di-kanda	ki-azá
to speak	fallar	ku-zuela	ku-zôla
spoon	colher (rama)	n-gutu	ci-tabu
star	estrella	tetembua	i-tutu
sun	sol	di-kumbi	di-bá
to swim, bathe	nadar, banhar	ku-zoua, ku-oua	ku-ouela
T			
thirst	séde	di-niota	niota
tattooing	tatoagem	m-bumba	saló
“	“	“	ki-or ci-mbumba
thigh	coxa	ki-takataka	ci-belu
this one	este, esta	iú	nii-uu
tongue	lingua	di-mi	di-mi
tobacco	tabacco	ma-kania (pl.)	ma-kaia, (pl.)
tooth	dente	di-zu, di-ju	di-zua
teeth	dentes	ma-zu, ma-ju	ma-zua
to tread on	pizar	ku-diota	ku-zeba
tree	arvore	mu-xi, mu-ci	mu-ci
trowsers (<i>lit.</i> cloth- ing of legs)	calças (vestuario das pernas)	ji-kalasá	ci-lulu ci-a bi-lama
U			
to urinate	urinar	ku-susa	ku-zukunia
V			
vein, sinew	veia, nervo	mu-xiba	n-jia
W			
water	agua	me-nia	ma-ii
to walk	andar	ku-enda	ku-enda
waist	cinta do corpo	ki-nionga	m-buiniingu
to wash	lavar	ku-sukula	ku-ovua
(in water)	(na agua)	ku-zoua (mu menia)	(mu maii)
to wear, to dress	vestir, vestir-se	ku-zuata	ku-luata
woman	mulher	mu-hatu, mu-kaji	mu-kaxi

ENGLISH

PORTUGUESE

KI-MBUNDU

KISHI-LANGE

Y

yes

sim

eue, kiene

ñhñ! or mhm!

MISCELLANEOUS.

Tui' enu, let us go!—vamos!

Pututú! Pututú! Pututú! imitation of the tomtom's sound.—Imitação do som do tambor.

X! X! beckoning at the same time with the hand, palm downwards, and moving all the fingers together. This is for calling one whose name is not known. The movement with the hand means "come."

Moio, tó! is the greeting; *moio* meaning life.

Ua-bidia—he refuses.

U-di-ku—he is there, or here; signifying also "he exists."

Ba ngi niana tupu!—They have kidnapped me unjustly! This was the refrain of poor Musulu's conversation!

(*To be continued.*)

GEOGRAPHICAL NOTES.

BY

GEO. C. HURLBUT, *Librarian.*

THE SIXTH INTERNATIONAL GEOGRAPHICAL CONGRESS.—The following notice has been received :

PATRON: HER MAJESTY THE QUEEN.

VICE-PATRON: H.R.H. THE PRINCE OF WALES, K.G., K.T., K.P.,
G.C.B., ETC., ETC.

It has now been definitely arranged that the Sixth International Geographical Congress will be held in London early in August, 1895, the precise date to be announced later.

The Organizing Committee cordially invite all who take an interest in any of the various aspects of Geography to attend the Congress, and to assist in making it a scientific success.

As the Congress is INTERNATIONAL it is proper that the subjects submitted for consideration should be of wide importance and of permanent interest. The Organizing Committee, assisted by specialists, are now arranging a programme of subjects suited for discussion, and are in communication with geographers of several nationalities. The attendance at the meetings of those most able to discuss the subjects which may be introduced is invited, and may confidently be expected.

Communications intended for the Congress may be made in French, German, Italian, or English.

At present it is only considered necessary to announce the general heads under which the various subjects to be dealt with at the Congress will be grouped. They are as follows:—

- I. Mathematical Geography, including Geodesy.
- II. Physical Geography, including Oceanography, Climatology, and Geographical Distribution.
- III. Cartography and Topography.
- IV. Exploration.
- V. Descriptive Geography. Orthography of Place-names.
- VI. The History of Geography.

VII. Applied Geography—with special reference to History, Commerce, Colonization, etc.

VIII. Education.

At a later period it will be decided to what extent, if at all, the Congress will be divided into groups or sections for the purposes of holding meetings. But in any case business will be so arranged that as far as possible all the subjects for discussion and consideration will be brought before all the Members of the Congress. When necessary, Committees will be appointed to deal with special subjects.

The Organizing Committee reserves to itself the privilege of determining the order and nature of the proceedings on each day.

Geographical problems connected with Colonization will probably be dealt with in some detail at the Congress, and therefore those interested in or connected with the Colonies of all European countries, are specially invited to attend.

The subscription payable by Members is £1, or 25 francs. On payment of 10s. or 12.50 francs, the wives and daughters of Members can obtain all the privileges of membership, except the right to receive copies of any publications which may be distributed to Members.

A circular giving full details as to arrangements, subdivision of subjects, Exhibition, etc., will be issued next year.

It is requested that the contents of the present circular may be made as widely known as possible.

All communications should be addressed to the Secretary, International Geographical Congress, 1 Savile Row, London, W.

J. SCOTT KELTIE,
HUGH ROBERT MILL, } *Secretaries.*

LEONARD DARWIN,
Chairman of Committee.

1 SAVILE ROW, LONDON, W.,

November, 1893.

A FAMOUS CENTENARY.—The Municipality of Oporto proposes to celebrate on the 4th of March, 1894, the fifth centenary of the birth of Prince Henry the Navigator, whose name calls up the heroic story of Portuguese maritime adventure and achievement.

The man was worthy of the epoch and the nation, and the coming celebration interests the civilized world. Its significance is well set forth by Mr. Major, the biographer of Prince Henry, in these words :

“ When we see the small population of a narrow strip of the Spanish Peninsula, limited both in means and men, become, in an incredibly short space of time, a mighty maritime nation, not only conquering the islands and Western Coasts of Africa and rounding its Southern Cape, but creating empires and

founding capital cities at a distance of two thousand leagues from their own homesteads, we are tempted to suppose that such results must have been brought about by some freak of fortune, some happy stroke of luck. Not so : they were the effects of the patience, wisdom, intellectual labor, and example of one man, backed by the pluck of a race of sailors who, when we consider the means at their disposal, have been unsurpassed as adventurers in any country or in any age."

STANDARDS OF LENGTH AND MASS.—It is formally announced, in Bulletin No. 26 of the U. S. Coast and Geodetic Survey, that the International Prototype Metre and Kilogramme will in the future be regarded by the Office of Weights and Measures as fundamental standards, and that the customary units, the pound and the yard, will be derived therefrom in accordance with the Act of July 28, 1866. This Act establishes the following equations :

1 yard— $\frac{3600}{1000}$ metre.

1 pound avoirdupois— $\frac{7000}{1000}$ kilogramme.

The International Standards were prepared by the Bureau organized under resolution of the Metric Convention of 1875, in which seventeen governments were represented.

Copies of the International Prototypes were distributed by lot in 1889, and the United States received Metres Nos. 21 and 27, and Kilogrammes Nos. 4 and 20. The metres and kilogrammes are made of the same material, an alloy of platinum, with ten per cent. of iridium.

The seals, which had been placed on Metre No. 27 and Kilogramme No. 20 at the International Bureau of Weights and Measures near Paris, were broken January 2, 1890, in the Cabinet room of the Executive Mansion by the President of the United States, in the

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presence of the Secretaries of State and of the Treasury and a number of invited guests. This was the formal adoption of the National Prototype Metre and Kilogramme.

The announcement now made was approved by the Secretary of the Treasury, April 5, 1893.

THE NEW PACIFIC CABLE.—The work of laying the cable between Gomen, on the west coast of New Caledonia, and Bundaberg, on Hervey Bay, Queensland, was finished early in October. This is regarded as the first section of a cable which is ultimately to unite Australia with Canada and Europe by successive stages, from New Caledonia to Fiji, from Fiji to Samoa, from Samoa to the Fanning Islands, from the Fanning Islands to Honolulu and from Honolulu to Victoria, Vancouver Island.

A WONDERFUL CARPET.—The South Kensington Museum acquired last summer a carpet, which formerly adorned a tomb in the great mosque of the old capital city of Ardebil, in northwestern Persia. This work of art measures 34 feet 6 inches in length and 17 feet 6 inches in breadth. The knots (tied by hand) number 380 to the square inch, and for the whole carpet 33,037,200. The design consists of a central medallion in pale yellow, surrounded by cartouches of various colors, disposed on a dark-blue ground, covered with floral tracery. In each corner is the section of a large medallion like that of the centre; and each section is surrounded by cartouches. The border is composed of alternate long and circular panels, with a lobed outline

on a brown ground, covered with flowers. A panel at the upper end bears the inscription :

"I have no refuge in the world other than thy threshold, my head has no protection other than this perchway. The work of the slave of the Holy Place, Maksud of Kashan, in the year 942 " (A.D. 1535).

THE NATIONAL MIND IN GEOGRAPHICAL NAMES.*—In this little work, which is a reprint of articles contributed to *Ausland* for 1893, Dr. Egli, the author of *Nomina Geographica*, lays down the proposition that the bestowal of geographical names, considered as a manifestation of the genius of a people or a time, reflects the degree as well as the direction of culture in the different peoples. This leads to the following deductions :

1. Among primitive peoples the prevailing names will be those of natural objects ; among civilized men those relating to civilization ;

2. The simplest nature-names, consisting of the bare appellative, are products of the infancy of a people ;

3. A retrogression in the civilization of a people postulates a retrogression in the intrinsic worth of its new name-creations ;

4. The character of the body of geographical names corresponds to the spiritual endowments of a people ;

5. The prevailing civilizing influences in a people—the social, the political, the ecclesiastical, etc.—seek expression in the names of places.

These general principles are illustrated in a lively way and with abundant learning, by examples from the records of ancient and modern geography.

* *Der Völkergeist in den Geographischen Namen.* Von Dr. J. J. Egli, Professor in Zürich. 8°. Leipzig, Friedrich Brandstetter, 1894.

The percentage of culture-names bestowed by discoverers is very high, as appears from the following list of sixteen celebrated navigators (other than English): Kotzebue, 89.7 per cent.; Krusenstern, 86.7; Columbus, 64.4; Magellan, 76.7; Maurelle, 52.2; Mendaña, 69.2; Sarmiento, 65.2; Baudin, 91.6; Bougainville, 56.2; d'Entrecasteaux, 69.0; La Pérouse, 90.3; Barentz, 55.6; Le Maire, 72.0; Tasman, 92.3; Haast, 91.7; and Kane, 94.8. For eighteen English navigators Dr. Egli finds, on the whole, a higher percentage of culture-names: Dampier, 68.2 per cent.; Wallis, 59.4; Cook, 61.9; Shortland, 85.7; Flinders, 57.7; King, 80.3; John Ross, 95.9; Parry, 94.0; Franklin, 90.0; Beechey, 93.9; Fitzroy, 72.6; Mitchell, 85.2; Back, 90.0; Grey, 85.7; James Ross, 96.1; Stokes, 56.6; McClure, 95.5, and Belcher, 77.8.

A comparative table of names taken from various peoples and tribes shows in several instances a surprisingly high proportion of nature-names:

	Whole No.	No. of Nature-Names.
Eskimo - - - - -	43	39
Dravidian - - - - -	58	40
Malay - - - - -	98	81
Polynesian - - - - -	111	92
Rhaeto-Romanic - - - - -	122	101
Mongolian - - - - -	127	102
Negro - - - - -	135	106
Phoenician - - - - -	153	77
Samoied - - - - -	163	152
Chinese - - - - -	171	130
Persian - - - - -	174	68

	Whole No.	No. of Nature-Names.
Bhota - - - - -	177	137
Italian - - - - -	270	151
Hebrew - - - - -	321	223
Indian (Am.) - - - - -	324	229
Roman - - - - -	401	110

The national characteristics of the discoverers and colonists mark the nomenclature of the New World.

The Spaniards and the Portuguese sought their names in the Church Calendar, and the Netherlanders looked for theirs in the associations of their struggle with Spain; while the political history of France explains many of the French names in America and in the South Sea. The English were fond of proper names and names with a direct bearing on the position or the relation; and Dr. Egli cites, as a typical instance of the difference between them and the Spaniards in this matter, the names given to the four pointed islands at the western end of Magellan Strait. These islands, he says, were called by Sarmiento (1580) *The Four Evangelists*, by Hawkins (1594) the *Sugar Loaves*,* and by Narborough (1670) *Islands of Direction*, "because they formed a capital leading mark for the Strait of Magellan."

* This is an error. Hawkins says only: "From Cape Desire, some foure leagues north-west, lye foure ilands, which are very small, and the middlemost of them is of the fashion of a sugar-loafe."—*The Observations of Sir Richard Hawkins, etc.*, p. 141. Reprint, Hakluyt Society, London, 1847.

Dr. Egli's authority is the German translation of the president De Brosse's *Histoire des Navigations aux Terres Australes*, 2 Tomes, Paris, 1756. In the original French the statement reads (Tome 1, p. 247): "A quatre lieues au nord-ouest de ce cap on voit quatre petites isles en pains de sucre: Four leagues to the northwest of this cape are seen four little islands shaped like sugar-loaves."

Nothing is said in the text about naming the islands.

The difference exists, no doubt, but the name *Islands of Direction*, which does not explain itself, is no improvement on Sarmiento's *Evangelists*; and this has, in fact, been adopted by the English.

In the chapter on *The Canadians and Yankees* Dr. Egli notes the American patriotic spirit which has expressed itself in so many repetitions of the names of presidents and other public men, more or less distinguished; but he is mistaken when he ascribes to the influence of culture the violent transfer of such names as Babylon, Rome, Egypt and Syracuse to the map of the United States. This abuse, traceable in many instances to a single person, is due to the lack of culture and to poverty of imagination.

THE SUN'S ATMOSPHERE.—On the 25th of October last M. Janssen read before the Institute a paper on his observations made at the Mont Blanc Observatory, Sept. 14 and 15, on the absence of oxygen from the atmosphere of the sun :

"We already knew," he said, "that the radiating surface of the sun was protected from contact with the icy celestial space by several gaseous envelopes. Of these the uppermost is the so-called Corona which produces, in total eclipses, the splendid phenomena of the glories and the crown. This uppermost envelope is mainly composed of hydrogen, the lightest and most transparent of gases. This transparent and protecting atmosphere insures the chief function of radiation, and we now see that by an equally admirable arrangement oxygen, the substance which might jeopardize this function, has been carefully excluded."

THE OPEN ARCTIC SEA, AND 84° N. LATITUDE.—According to the Portland *Oregonian* Capt. A. H. McGregor, of the Pacific Whaling Company's steamer *Orca*, reports that nine of the Company's vessels passed the season of 1892 near Cape Bathurst, "*the farthest point north and east ever reached by a vessel of*

any kind," entering the Arctic through Bering Strait. Captain McGregor adds :

"We could have made the trip from the Pacific to the Atlantic last year if we had so desired, but our business was whaling, not exploring. We found what is called the breeding-ground of the whales, which lies between Cape Bathurst and the Mackenzie River. We left four vessels, the *Norwalk*, *Balaena*, *Grampus*, and *Newport*, to winter there while the others finished the season on the Siberian coast. Those that wintered in the Arctic have been whaling all summer, but we have had no report from them and do not know if the ocean is open again this year. Natives at the cape whom I questioned told me that the ocean was fairly open three years out of four, and that there was a great big sea one year in five. Last year was what they termed 'great big sea,' and they said that the same conditions prevailed in 1889. A large vessel could not pass through a fairly open sea, so the chances of reaching Greenland through the Arctic Sea are one in five. From this I am inclined to the belief that Collinson entered the ocean when it was 'open.'"

The statement as to the open condition of the Arctic in 1892 is worthy of record, but the assertion as to Cape Bathurst is very far from the truth.

Even more remarkable than Capt. McGregor's story is that telegraphed, October 3, from San Francisco. According to this telegram the steam whaler *Newport* spent the past winter near Herschell Island, and worked her way in the summer of 1893 as far as N. Lat. 84°, the highest point ever reached, and it was believed that the Pole might have been reached by a party, had the vessel been supplied with dogs and sledges. All these particulars were invented by the conscientious reporter. What the captain of the *Newport* really said is told in the following extract from a letter, written by Prof. Geo. Davidson, of the U. S. Coast and Geodetic Survey, on the 31st of October :

"The Captain has been in to see me and has given me some graphic descriptions of his actual experience in those waters. . . . But he reached only 73°, and is dreadfully annoyed that the newspaper reporter made such an erroneous statement when he had the truth before him. At 73° the Captain saw no ice blink to the northward and therefore he thinks there was clear water for probably forty or fifty miles."

LOST IN BAFFIN'S BAY.—J. A. Björling and S. Kalstinius, two young Swedish naturalists, left St. John's, N. F., with three companions in the schooner *Ripple*, in the summer of 1892, to make natural history collections in north-western Greenland and in Ellesmere Land.

They were scantily provided with means, and their vessel was known to be unfit for the dangerous voyage before them; but they went as if on a holiday excursion, and reached Godhavn in safety.

There they were kindly treated and supplied with provisions; and on the 2d of August they set sail again. Nothing had since been heard of them, till on the 17th of June, 1893, Captain Mackay, of the Scotch whaler *Aurora*, found in a cairn on Carey Island, in Baffin's Bay, the following records, which appeared in the London *Times* of November 18:

The first of the documents, both of which were written by Mr. J. A. Björling, is as follows:

"Visited South-East Carey Island August 16, 1892. I left Godhavn on the 2d of the month and sailed along the ice in Baffin Bay until the 13th, when I, in one day only, sailed across Melville Bay to Cape York. An easterly hurricane near that place drove me to the west, and at noon I was near Cape Parry, from which point I sailed over to Carey Islands in order to supply myself with some provisions from the English dépôt. On August 17, after having taken on board the provisions from the Nares dépôt, my schooner *Ripple* went ashore on the south side of this island, where you will find us in a small tent. A new report will be left here before we leave the island. (Dated) August 17, 1892.

"Postscript.—Having lost the ship I am obliged to winter in these regions. I leave this island on the 26th of August for Toulke Fjord. If I should be compelled to go from there to another place further notice will be deposited in the cairn at Pandora Harbour. With the provisions from the Nares dépôt here, I hope to have food enough for myself and my four companions until June, 1893."

The second note runs thus:—

"To visitors to South-East Carey Island in 1893.—As you can see by my notices here, I tried, after the loss of my vessel, to reach Toulke Fjord in order to winter there, but after reaching Northumberland Island I was compelled from several causes to give up this voyage and return to Carey Island. I was detained

on this island by bad weather for a longer time than I anticipated. I start now for the Eskimos at Clarence Head on Cape Faraday in Ellesmere Land. As I hope that a whaler will visit Carey Island next summer in order to rescue me and my party I will attempt to reach that island before the 1st of July. Should none be there by the 15th of July, I must, if possible, go to the Danish settlements. Therefore, if you should visit this island later than July 1 and should find no notice from me concerning my voyage to the Danish settlements, I should be very much obliged to you if you would go to Clarence Head (50 miles from this) where I shall leave in a cairn on the most easterly point a notice concerning the fate of myself and my party during the winter. Finally, I beg you to send all notices from me to Professor Baron A. E. Nordenskjöld, Stockholm, Sweden, or to the nearest Swedish Consul, with a statement of the time and place where they were found. If I cannot reach the Eskimos our provisions will not last longer than to the 1st of January, failing supplies from any dépôt. Party now consists of five men, of whom one is dying.

“S. E. Carey Island, 12th October, 1892.

“J. A. BJÖRLING, Swedish Naturalist.”

A PROPOSED ANTARCTIC EXPEDITION.—Dr. F. A. Cook, who was the ethnologist of the Peary North-Greenland Expedition in 1891-92, has been engaged for some months in preparations for an Antarctic Exploring Expedition in the autumn of 1894.

The start will be made from New York about the 1st of September, in a steam whaling vessel, provisioned for three years, and provided with two life-boats, one large enough to cross the sea between the South Shetland Island and South America. The course will be to the Falkland Islands, where supplies will be taken in, and thence directly to Louis Philippe Land, where one of the life-boats and a store of provisions will be left.

Advantage will be taken of the first opening in the ice barrier to press as far to the south as possible, and then to begin systematic scientific observations.

The travelling equipment will be made and perfected during the long Antarctic night, and as soon as the sun returns work in the field will be begun. The in-

land party will start for the south, and those who remain on the coast will continue their observations until the company reassembles, which will be about the 1st of March.

It is supposed that the Falkland Islands will be reached, on the return, about the 1st of May, 1895. Dr. Cook says :

"I do not expect to prolong the Southern sledge journey more than three months. On this journey the glacial phenomena, snow and ice formation, will be carefully studied. Many other important meteorological and geological observations may be made. A very novel investigation, and one to which I expect to devote a great deal of attention, is the Antarctic ice cap, which, perhaps, is nearly 3,000 miles in diameter, and probably nearly circular in form ; its thickness is a problematical matter, and has been a subject of much theorizing by scientific men."

This plan agrees in its general features with the one sketched by Dr. Jno. Murray, of the Challenger Expedition, in a paper on "The Renewal of Antarctic Exploration," read before the Royal Geographical Society, on the 27th of November.

Dr. Murray said that within the past few months he had been in communication with geographers and scientific men in many parts of the world, and that there was unanimity among them as to the necessity for South Polar exploration. The work of an Antarctic expedition would be to determine the nature and extent of the Antarctic continent ; to penetrate into the interior ; to ascertain the depth and nature of the ice-cap ; to observe the character of the underlying rocks and their fossils ; to take magnetical and meteorological observations both at sea and on land ; to observe the temperature of the ocean at all depths and seasons of the year ; to take pendulum observations on land, and possibly also at great

depths in the ocean ; to bore through the deposits on the floor of the ocean at certain points to ascertain the condition of the deeper layers ; to sound, trawl, and dredge, and study the character and distribution of marine organism.

It was for the Royal Navy to undertake the task, with two ships of 1000 tons each, and the operations should extend over three summers and two winters. Early in the first season a wintering party of about ten men should be landed somewhere to the south of Cape Horn, probably about Bismarck Strait, at Graham Land. The expedition should then proceed to Victoria Land, where a second similar party should winter, probably in McMurdo Bay, near Mount Erebus. The ships should not be frozen in, but should return to the North, conducting observations of various kinds towards the outer margins of the ice. After the needful rest and outfit, the position of the ice and the temperature of the ocean should be observed in the early spring, and later the wintering parties should be communicated with, and, if necessary, reinforced with men and supplies for another winter. During the second winter the deep-sea observations should be continued to the north, and in the third season the wintering parties should be picked up, and the expedition return to England.

THE LIVERPOOL GEOGRAPHICAL SOCIETY.—The second winter session of this young Society was opened on the 10th of October with an address by Mr. Clements R. Markham, President of the Royal Geographical Society, on "The Exploration of the Polar Regions, including Arctic and Antarctic."

Mr. Markham affirmed the many uses, scientific and economic, of expeditions to the frozen North and South. He said that the hydrography of the Arctic seas had a most important bearing on the general question of oceanic winds and currents, as well as the temperature of the sea at various depths, and the prevailing winds with reference to currents. The climate of Europe depended in no small degree on the atmospheric conditions of the polar area, because the development of extremely low temperatures necessarily leads to corresponding extreme changes of pressure and other disturbances, the effects of which were felt far into the temperate zone. For the satisfactory appreciation of these phenomena a precise knowledge of the distribution of land and water within the Polar area was absolutely necessary.

Explorations in the Arctic had advanced the knowledge of magnetism and geology, of botany and zoology and every branch of biological science.

By work in the Antarctic regions light might be thrown on many interesting scientific speculations, such as those of Mr. Henry O. Forbes, derived from a study of the fossil birds of the Chatham Islands. He conceived the existence in tertiary times, of a vast Antarctica, clothed with vegetation, which connected New Zealand with South America and with Madagascar. Antarctic researches would test this and other explanations of puzzling biological facts which were still under discussion, either corroborating them, or perhaps explaining the phenomena which had given rise to them in other ways.

The greatest national value of these expeditions would

always be, however, that to which Lord Beaconsfield alluded, and which influenced his Government—"Polar expeditions encourage that spirit of enterprise which has ever distinguished the English people."

It was Lord Beaconsfield, also, who declared that the English were ruled by rhetoric, and not by logic. In the rapidity of this descent from the heights of science, it appears to have been forgotten that the English spirit of enterprise showed itself before Polar expeditions were heard of, and that some very enterprising nations have not turned their energies towards Arctic exploration.

THE LEWIS AND CLARK EXPEDITION.*—Full as the title of this book seems to be, it is marked by some omissions. Where brevity is no object the entire name, the "United States of America," should adorn the page; the expression *etc.*, while it leaves scope for the imagination, disappoints the reader, who looks for exact information; and no reference is made to the Dedication, which must have cost more than one anxious night.

* History of the Expedition under the Command of Lewis and Clark, To the Sources of the Missouri River, thence across the Rocky Mountains and down the Columbia River to the Pacific Ocean, performed during the years 1804-5-6, by Order of the Government of the United States. A New Edition, Faithfully Reprinted from the only Authorized Edition of 1814, with Copious Critical Commentary, prepared upon Examination of Unpublished Official Archives and Many other Sources of Information, including a Diligent Study of the Original Manuscript Journals and Field Notebooks of the Explorers, together with a New Biographical and Bibliographical Introduction, New Maps and other Illustrations and a Complete Index. By Elliott Coues, *Late Captain and Assistant Surgeon, United States Army, late Secretary and Naturalist, United States Geological Survey, Member of the National Academy of Sciences, etc.*

In Four Volumes. 8°. Francis P. Harper, New York, 1893.

The book itself, fortified by the editor's scientific and historical notes and properly indexed, will be welcomed by many who do not share Dr. Coues's enthusiasm with regard to what he calls "our national epic of exploration."

The text is substantially that of the Biddle edition, which, however, is not followed, as the preface declares, "punctiliously and with scrupulous fidelity"; for Dr. Coues immediately adds that he has touched the text here and there in a matter of grammar or punctuation, that he has interpolated one new chapter, and that he has changed the spelling of some proper names. It was, no doubt, quite right to do these things, but they are not consistent with scrupulous fidelity.

The notes add greatly to the value of the work, which may fairly be called the definitive *Lewis and Clark*, and Dr. Coues may be forgiven if he has not searched every corner of the country for possibly existing manuscripts relating to some of the men who went with the expedition. He has studied the original journals and notebooks, and the labor must have been severe, indeed, which wrung from him this humiliating confession :

"It was a daily draft upon a fund of omniscience which I am satisfied I never possessed." (Preface, p. vii.)

It is to be said, nevertheless, that with all his modesty Dr. Coues rarely shrinks from giving us the benefit of his opinion on matters not strictly scientific, as in the following passage :

" . . . for Thomas Paine's soul flowed into Jefferson's, bearing a precious quality of spiritual reasonableness, which informed and filled the mind of the greatest statesman America ever produced. What we owe to Jefferson is history—what Jefferson owed to Paine is the very mystery of godlikeness. It is well to keep the reputed paternity of our country before the common people by the name of Washington, and uphold William Tell among the simple Swiss ; but Washing-

ton's intellect shrinks out of sight before Jefferson's, and Jefferson's dwarfs in comparison with Paine's" (p. 467, note 17).

These are brave words ; but how are the common people, mere Americans, to retain their simple belief in the Father of his Country, now that the fierce light of Coues's intellect has been turned upon him ?

Other annotations, remarkable for knowledge of various subjects (grammar not included) and for good taste, occur on pp. 986-987 and 1192 ; and everywhere pearls are dropped by the way.

AROUND THE WORLD.*—The publishers of this new monthly magazine say, in their introduction :

"While not claiming originality of conception, having for precedents the admirable *Au Tour du Monde* and three or four German publications of an equally high order, the magazine may, with its initial number, justly assume its position as first of its kind for this country."

This position fairly belongs to the number, which is handsomely printed and illustrated, though it contains but 20 pages ; and it must be added that there is originality in the change of name bestowed upon *Le Tour du Monde*.

There should be a field for this publication, recommended as it is by its appearance and by the low price of subscription (\$1.50 a year), and edited by a writer, always eloquent in the cause of geography, though sometimes less than clear ; as when, on p. 20, he speaks of Bonvalot as "the successful transgressor of Central Tibet," and identifies the Land of the Rising Sun with China.

* Around the World : an Illustrated Magazine of Tours, Travels and Explorations, devoted to a Knowledge of the Earth and of its Inhabitants. Edited by Prof. Angelo Heilprin. Vol. I., No. 1, December, 1893. The Contemporary Publishing Company, New York and Philadelphia.

CURRENTS OF THE GREAT LAKES.—The *Monthly Weather Review*, for September, 1893, gives the results of the efforts made in 1892 to obtain some idea of the currents of the Great Lakes. These results are shown in a chart, published in September.

Bottles, so weighted as to float just beneath the surface of the water, were dropped by navigators in the open water of the Lakes. Of these bottles 463 were picked up and returned.

The surface-drift is made irregular by the variations of the wind, but, in general, the eastward motion toward the Saint Mary's River is very decided in Lake Superior. In Lake Michigan there is a strong southward surface movement on the western shore, gradually turning eastward and becoming northeast or north on the eastern shore of the lake until finally it flows steadily towards the Strait of Mackinac. In Lake Huron the surface flow is to the south, deviating eastward in the eastern portion with a decided set into Georgian Bay and westward with equal force into Saginaw Bay; but in the extreme southern part of the lake the motion is towards the River St. Clair. In Lake Erie and Lake Ontario the surface water is driven by the wind to the east-northeast.

The returns relate to the season of navigation in 1892, and principally to the period from April to October, so that the surface-floats must have described their course within a few months.

A note by the Editor of the *Monthly Weather Review* quotes from the *Transactions of the Canadian Institute* the account of an investigation of the currents of Lake Ontario by the Provincial Board of Health and

the Toronto City Council, in the summer of 1801, in the part of the lake near Toronto. The investigation satisfactorily showed that the lake currents are caused by the wind and that they change direction as the wind changes.

THE CLIMATE OF THE CITY OF MEXICO.*—Don Mariano Bárcena, Superintendent of the Central Meteorological Observatory of Mexico, has published in pamphlet form a paper on the climate of Mexico, prepared by him for the Meteorological Congress of the United States in 1893.

Accompanying the pamphlet is a résumé in English, from which the following extracts are made :

The observations taken hourly in the shade cover the years 1877-1892 ; those in the open air began in 1882 and were taken every three hours ; the data of the temperature of the soil and the magnetical data are deduced from a period of three years.

The mean annual height of the barometer is 586 mm. .37 (23.086 in.), the maximum in 16 years 594.19, the minimum 579.80.

The mean annual temperature is 15°.4 Cent. (59°.72 Fahr.), the maximum in 16 years, in the shade, 31°.6 (88°.88 Fahr.), the maximum, in the open air, 49°.2 (120°.56 Fahr.) and the minimum, in 16 years, in the open air, —7°.2 Cent. (19°.4 Fahr.).

The annual number of rainy days is 139 and the mean annual rainfall 604 millimetres (about 23.70 in.). The cloudy days average 120 in the year and the clear

* El Clima de la Ciudad de México-Breve Reseña por Mariano Bárcena. Director del Observatorio Meteorológico Central. 8vo. México, 1893.

days 105. The prevailing direction of the clouds is Southwest, and the prevailing wind is Northwest.

The mean annual humidity is, in the shade, 61 ; in the open air, 62. The coldest month is January ; the hottest April. The greatest quantity of rain falls in August ; the least in January and February. March and April are the driest months.

In the 16 years 37 shocks of earthquake, nearly all slight, were registered ; the heaviest, on the 19th of July, 1882, lasted 40 seconds and was felt over half the area of the Republic.

Mr. Bárcena's English is everywhere intelligible, with the exception of the phrase *invaluable duration* for *inappreciable duration*.

THE CLIMATE OF RIO DE JANEIRO.--Mr. L. Cruls, Superintendent of the Observatory, Rio de Janeiro, has published the results of the meteorological observations recorded during the forty years 1851-1890, accompanied by plates showing the variations of temperature, the humidity, the atmospheric pressure, etc.

The conclusions reached by Mr. Cruls from his study of the data before him are :

Atmospheric disturbances are rare and the barometer falls not more than from 5 to 10 millimetres (.1875 to .375 inch) and this in the course of a few hours, and generally under the influence of a strong *pampeiro*, blowing from the southwest. The greatest velocity of the wind is 30 metres a second—67 miles an hour.

The maximum annual temperature varies between 35° and 37°.5 Centigrade (95° and 99°.5 Fahr.). The highest thermometer is at the beginning of February,

the lowest early in July, and the mean annual variation hardly exceeds 6° Cent. (10°.8 Fahr.). The daily variation is less than half this figure.

The oppressiveness of the heat in the summer is to be attributed to the great humidity of the atmosphere. The mean annual humidity amounts to more than 78 per cent., and the mean extremes show a variation of only 3 per cent.

The annual cloudiness of the sky (zero representing a cloudless heaven) amounts to 64 per cent, only 3 per cent. below that of Greenwich. There are 131 clear days in the year, a clear day being one with not more than one-half per cent. of cloud.

The annual rainfall is 1090 millimetres (42.84 inches), and there are 111 rainy days in the year. The precipitation is greatest in the months of March and December, and lightest in July. The heaviest rainfall for a single month was that of April, 1872, when there fell 455 millimetres (nearly 18 inches). In the forty years under review there were three months without a drop of rain : June, 1869, and August, 1879 and 1884. The greatest fall for any one year was 1556 millimetres (about 62 inches) in 1862, and the least was 732 millimetres (nearly 29 inches) in 1889.

There are 30 stormy days in the year ; the extremes recorded being 11 in 1856 and 49 in 1862. The monthly average is 2.5. The stormiest month is January; with 6.3 days, and the least disturbed is the month of June with 0.3 day.

THE DROUGHT IN ENGLAND.—Mr. G. J. Symons, F.R.S., in a letter to the *London Times* of Oct. 7, re-

views the dry period which set in with March and closed with September of the year 1893.

In London the fall for the seven months was :

March.	April.	May.	June.	July.	Aug.	Sept.
.32	.24	.80	.73	2.46	1.61	1.07

The total for the seven months is 7.23 inches, and for the nine months, January–September, only 11.54 inches ; the average yearly rainfall being 25 inches.

The most noticeable feature in the review is that there were four consecutive months, each with less than an inch of rain. Mr. Symons finds but one other instance of the kind in his record of observations for thirty-five years, and that is for the four months, Oct., 1879–Jan'y, 1880, which show : October, .80, November, .72, December, .86, and January, .31.

In the counties of Middlesex, Surrey, Kent, Sussex, Herts, Bucks, Oxford, Bedford, Essex, Norfolk, and Wiltshire, that is, in nearly all the southeast of England, the four months March–June, 1893, were as dry as in London.

THE MANCHESTER SHIP CANAL.—This canal, intended to connect Manchester with the sea, was authorized by Act of Parliament passed in 1885, but the work was not begun till November, 1887.

The length of the canal is $35\frac{1}{2}$ miles, from Eastham on the Mersey to Old Trafford in Manchester ; the minimum depth of water is 26 feet, the minimum width at the bottom 120 feet, and the average width at water level 170 feet. To overcome the fall of between 60 and 70 feet in the whole distance there are five sets of locks. The three locks at Eastham measure, respec-

tively, 600 feet by 80, 350 feet by 50 and 150 feet by 30. The other sets of locks measure 600 feet by 65 and 350 feet by 45. The time required for the passage through the canal will be ten hours.

The docks constructed between Manchester and Salford for the accommodation of shipping have an area of 114 acres, and the quays cover more than 170 acres.

The cost of this canal, which adds one to the great seaports of the world, was £15,000,000.

It is announced that pilotage will not be compulsory, but many of the Mersey sea pilots, as well as others, will take charge of ships, and a plan of the canal is being prepared for their use. Many of the Mersey tugs are licensed to tow vessels in the canal, and arrangements are being made for the provision of powerful lamps for navigation by night. Steam and hydraulic cranes will be at hand to secure despatch in discharging and loading, and experienced stevedores are being obtained from various ports. The attention of shipowners is directed to the fact that the fixed bridges over the canal are 75 feet above the ordinary water level; the height of the masts should not exceed 70 feet.

CURRENTS IN THE BAY OF BISCAY.—Bulletin Nos. 14–15, 1893, of the Bordeaux Geographical-Commercial Society, contains a paper by M. A. Hautreux on the currents of the Bay of Biscay, carefully studied by him during the past summer.

Before entering upon his experiments M. Hautreux compared and analyzed the following documents :

1. The American Pilot-Charts, on which are indicated

the derelict vessels floating in the North Atlantic and the points at which they were encountered ;

2. The maps of the direction and probable intensity of the currents in the North Atlantic. These were drawn by Lieut. G. Simart and published by the French Ministry of Marine in 1889 ;

3. The chart published by Prince Albert of Monaco in 1892. This chart is based upon the experiments with floating bottles and kegs dropped by the yacht *l' Hirondelle* in her cruises in 1885, 1886, 1887, and 1888.

Four of the derelicts mentioned in the Pilot Charts, passed, without entering, the Bay of Biscay, drifting at the rate of 15 to 16 miles in 24 hours ; obeying, it is concluded, the impulse of a current which sets, between the meridian of the Azores and that of Finisterre (Spain), towards the opening of the Bay. Four other derelicts and two bottles entered the Bay, within which the current changes to a general S.S.E. direction ; and there appears to be between Cape Ortegal and the island of Ushant (Ouessant) a space of more than 100 miles in width, where the waters move in opposite directions and in eddies.

Lieut. Simart's map shows that the general movement of the waters is along the coast of France from the northwest to the southeast and then to the south ; the very reverse, that is to say, of what is known as Rennell's current.

The floats, thrown out from *l' Hirondelle*, found their way, not to the coasts of La Vendée and Brittany, but to the head of the Bay of Biscay ; and they gave no indication of a northward current along the coast.

M. Hauteux made his experiments with floats, composed of two bottles fastened together by a galvanized iron wire, 3 or $3\frac{1}{2}$ metres * (9.94 to 11.48 feet) in length. One bottle was nearly filled with water so as to sink and to keep the other floating, bottom up, on the surface of the water. United in this way, the bottles were unaffected by the wind and were moved solely by the surface current. The length of 3 metres was adopted in order that when the apparatus reached the coast the lower bottle, grounding at high tide, would keep the whole in a position to be picked up at low water; and on the coast of the Landes the high tide is never less than $3\frac{1}{2}$ metres.

Between May 26 and July 31, 40 of these floats were dropped and 21 were recovered. The points established seem to be :

1. Bodies floating in the Bay of Biscay are carried towards the coast of the Landes ;
2. They drift less rapidly as they approach the land ;
3. The direction of the drift curves towards the south, at a little distance from the coast ;
4. The time at which they make the land is closely related to the time of spring tide.

EMIN PASHA'S DAUGHTER.—It appears that Emin Pasha's child Ferida is now in Berlin under the care of her aunt. The Rev. Horace Waller, of Twywell Rectory, Thrapston, writes to the *London Times*, of Oct. 3:

"When Emin arrived on the coast of Africa at the end of 1889, and with a view to his daughter's future, it was deemed advisable that she should go through the legal process of 'adoption' to make doubly sure, as no valid proofs could be forthcoming of her father's legal marriage to his Abyssinian wife in the wilds of

* *Nature* of Oct. 19 (p. 601) makes the floats consist of "two bottles attached by a cord *a metre* in length." It is in this way that knowledge is increased.

the Soudan. His wife was dead, and he himself had just arrived at the required age—50 years, so that there was no impediment.

"The legal process was carried out forthwith, and one is relieved to find that Ferida Schnitzler is not only in good hands, but provided for, and a dweller amongst those who are inclined to score some points in Emin's favor which are hardly granted here.

"The child is described as being nine years of age, very small, but unusually pretty; she seems also to be high spirited and intelligent. She has no knowledge of the sad fate of her father, and the recollection of her mother, who died when she was five years old, has passed away."

MOUNT SINAI.—Prof. A. H. Sayce, in the *Imperial and Asiatic Quarterly Review* for July, regrets to disturb the convictions of the travellers who have journeyed among the monotonous and inhospitable rocks of the so-called Sinaitic Peninsula, but declares nevertheless that Mount Sinai is not to be found in the Peninsula.

It stood, according to his reading of the Old Testament record, on the borders of Edom, if not actually within the limits of the Edomite Kingdom, and the Yâm Sûph from which the Israelites approached it was the Gulf of 'Aqâbah.

The Egyptian monuments show that, at the period of the Exodus, the western half of the Peninsula was more strongly garrisoned by Egyptian troops than the valley of the Nile itself, and that it would have been madness for fugitives from Egypt to enter the territory.

Mr. Sayce concludes that, while we may never know where Mt. Sinai actually was, we have to look for it on the borders of Midian and Edom, among the ranges of Mount Seir and in the neighborhood of Kadesh-barnea.

This conclusion will go far towards tranquillizing the disturbed convictions of the pilgrims.

YEMEN.—The British Vice-Consul at Hodeida, in his last report, gives a description of Yemen, the south-western province of Arabia.

It is bounded north by the Hejaz, northeast by the Arabian Desert, southeast by Hadramaut, south by the Gulf of Aden, and west by the Red Sea. The capital is Sana, and the most important towns are Feizan, Loheia, Zobeid, Mokha, and Hodeida. Loheia is a seaport of some importance, Mokha is now in ruins, and Hodeida is the capital of the sea-coast plain, or Tihama.

The decline of Mokha dates from the occupation of Aden by the British, in 1839, and the coffee trade has been transferred to Hodeida, which is a town of 50,000 inhabitants.

Yemen is very fertile; in most places there are two, and in some three, crops a year; and rain is abundant in June, July, and August. The chief products are coffee, lentils, wheat, grapes, and many other kinds of fruit. The population is estimated at 3,000,000, and the industries are agriculture, trade, and dyeing and weaving. The domestic animals are camels, asses, and sheep.

The Vice-Consul offers the following explanation of the Arab decline:

"The Arabs of the present day do not resemble the Arabs of the fifteenth and sixteenth centuries, when they were the only pioneers of civilization, and when they extended their conquests from Spain in the West to China in the East. Nowadays, on account of their intermarriages with slaves brought from Africa, the Arabs have morally and physically degenerated. Although I have seen some Arab captains using a rude kind of compass, I think the modern Arabs study neither navigation nor any other sciences."

The explanation is less clear than it might be, pos-

sibly because the Arab pioneers of civilization in the fifteenth and sixteenth centuries seem to have escaped the notice of historians.

There can be no doubt that Negro slaves are carried into Arabia at the present day, as they were in the fifteenth and sixteenth centuries, and long before that period, so that the supposed recent degeneracy of the Arabs can hardly be due to the admixture of Negro blood.

An extended study of the Arab race by the Vice-Consul would be a boon to civilization.

THE INDIAN CENSUS FOR 1891.—The Report of the Indian Census Commissioner for 1891 is reviewed in the London *Times* of October 10.

The total population was 289,187,316, of whom 287,223,431 came under the census operations ; and of these 221,172,952 live in British India and 66,050,479 in the Feudatory States.

The area of India is 1,560,160 square miles, or about 3 per cent. of the land surface of the globe, while it contains about 20 per cent. of the world's population. The density for all India is 184 to the square mile ; for British India alone (exclusive of Assam and Burma) 279. France has 186, Austria 191, Prussia 223, the German Empire 237, Italy 249, England and Wales 498 and Belgium 540 to the square mile ; but England and Belgium are manufacturing, countries, while the Indian population is chiefly engaged in agriculture.

The rate of increase is 0.93 per cent. a year ; below that of England and Wales (1.28 per cent.), Germany (1.07), Canada (1.07), Belgium (0.99), and above that

of Switzerland and Bavaria (0.64), Spain (0.55), Sweden (0.50), Italy (0.62) and France (0.06.)

The Commissioner of the Census, Mr. Jervoise Baines, reaches the following conclusions :

We have every reason to assume that the present rate of increase among the people of India is well within their means of subsistence. If maintained, which of course it will not be, it would be 75 years before the population doubled itself, and the problem of their support would then, no doubt, be a hard one for our successors. . . . Summing up what has been said above as to the conditions that affect the growth of the population of India, it seems, first, that the number of children annually born into the country is a very high one, and that there is no prospect of its speedy or extensive decrease. Then, again, that the tendency of British administration is to prolong the normal life, and to protect it, as far as possible, against the abnormal attacks to which it is there liable. As regards provision against the contingencies to which the above conditions give rise, there is, first, the prospect of, for a time at least, increasing the yield of food-supply from the soil ; secondly, the resources for the purchase of food may be increased by the production of materials in demand abroad, or in home manufacture ; thirdly, the growth of the non-agricultural industries ; and, fourthly, the increase of the area of land under tillage, due to either the extension of irrigation or, still more, to the slow migration of the surrounding population, as pressure increases, to land as yet untouched by the plough.

The total number of persons not born in India, including the French and Portuguese possessions, was 661,637. Of these 478,656 were born in countries contiguous to India, 60,519 in remoter Asiatic countries (China included), 100,551 in the United Kingdom, 10,095 in Continental Europe, America and Australasia, and 11,816 in Africa, the islands, and at sea. Of the Europeans about 85,000 consist of the British troops and their families, 10,500 belong to the Civil service and 6,100 are employed on the railroads.

Classified according to religious belief, there are 207,731,727 Hindus, 1,907,833 Sikhs, 1,416,638 Jains, 7,131,361 Buddhists, 89,904 Parsis, 57,321,164 Mohammedans, 2,284,380 Christians, 17,194 Jews, and 9,323,-

229 not attached to any of the faiths named, and practising some form of ghost or fetish worship.

Of the whole population, 46 in a thousand can read and write, and, excluding Europeans and Eurasians, only 1.4 person in a thousand knows English.

Of the women between 15 and 40 years of age 84 per cent. are married, while the average in Europe is 40 per cent.

Nearly 26 per cent. of the children die in the first year, and the average duration of life, which in England is 44 years, is 24 years in India..

THE JAGANNÁTH FESTIVAL.—Puri, commonly known as Jagannáth, is the chief town of Puri District, Bengal. It is situated on the coast, in Lat. $19^{\circ} 48' 17''$, and E. Long. $85^{\circ} 51' 39''$, and it has a population of 22 or 23,000, nearly all Hindus.

The town has neither commerce nor manufactures, but derives its support from the pilgrims, who flock to the shrine of Jagannáth every year. The houses are built of wattle covered with clay, and raised on platforms of hardened mud, about 4 feet high, and, with the exception of the principal avenue which leads from the temple to the country-house of Jagannáth, the streets are mean and narrow. The enclosure of the temple is 652 feet long and 630 feet in breadth; and a stone wall 20 feet in height screens it from profane eyes.

Within the enclosure are 120 temples, the largest being the great pagoda dedicated to Jagannáth, which has a carved conical tower 192 feet high. The principal entrance is known as the Lion Gate, and before it stands a beautiful monolithic pillar which once adorned

the Temple of the Sun, 20 miles above Puri. There are four chambers in the temple; the Hall of Offerings; the Pillared Hall, for musicians and dancing girls; the Hall of Audience, and the Sanctuary, which contains images of the god, his brother Balabhadra and his sister Subhadrá. These images are carried upon cars from the temple to the country-house, through the adoring multitude. The distance is less than a mile, but the journey takes several days; and if deaths occur, they are accidental. Sir William Hunter, in the account from which these facts are taken, says that the whole spirit of the Vishnu-worship is opposed to self-immolation, and that accidental death within the temple renders the whole place unclean.

This being the year of reincarnation of the gods, the festival at Puri was one of peculiar solemnity. It was attended by a correspondent of the *London Times*, which printed his letter on the 30th of September. He says:

“Even in Calcutta the pilgrims were so numerous as to fill up the Chitpore and Strand roads at night, but ‘the India General’ and Macneill’s ships took them to Cuttack, and there the fifty three-mile walk commenced. All along the (good) pucca road might be seen magnificent up-country men from Delhi, Bareilly, and elsewhere, and as handsome down-country Telugu women, but the vast mass of the people were plain-looking and poor Bengalis and Uryas. There were few children. One could not help noticing that the majority of the pilgrims were women. The rains had set in and had swollen the wide river just outside Cuttack, but under the wall of the Commissioner’s compound we found country boats which were poled across by means of five bamboos, and so stemmed the fierce current. . . . We got over in about twenty minutes, and after two days hard travel reached Puri. About eight miles away a pilgrim caught sight of the handsome dome, and passing on the khabar (news) to others, in a minute or two every one could be seen pressing forward with the bright light of religious enthusiasm in his eye. . . . Some missionary counted us as we streamed over the bridge into Puri, and said that by two o’clock in the afternoon of Saturday, the 15th of July, the day of the reincarnation, 132,000 pilgrims had passed into the town. We arrived on the Friday night, and I went round the lodging-houses with Dr. Banks, the civil surgeon. I

freely confess that I did not want to go, and never having been in a Hindu lodging-house (dharmaala) before, I imagined all sorts of filth. There used to be such even in Puri, but now the lodging-houses and private houses are as clean as European bungalows. We went into one with a beautiful covered courtyard, and there certainly were 400 pilgrims in the courtyard and in the cloisters instead of 110, the number written on the license, but the place had no odor or heat. Others were the same with twenty, seventy, sixty sleeping. I found every Government official, from the collector and the policeman downwards, on the *qui vive*, and slaving night and day to get the festival over quietly and without row or accident. . . . At 10 P.M. the Hindu manager ordered the great doors to be flung open, and the sacred umbrella of silk (with twelve white silken tassels hanging from the centre below round the handle) came down the steps inside the temple and halted just inside the door. Then the tomtoms and the gongs and the trumpet made music, and the lac of pilgrims shouted as Balabhadra came out into the square, and was escorted to his car by devotees, who flung him pice, annas, even rupees. . . . The three cars for the three gods had been stationed in the street the day before. They consisted of three wooden tiers, the topmost surmounted by a scarlet and black cloth canopy, and the whole mounted on twelve wheels. They looked very picturesque by day and quite massive in the torchlight."

At 11 o'clock there was another blare and Subhadrá came out to her car and half an hour later, the music sounded again and as soon as Jagannáth's silk umbrella and pith sun hat of cardinal red and gold appeared, the crowd shouted "Hari Jagannáth!"

It took a long time to carry the portly god to the space in front of his car and a still longer time to haul him up the plane, the real fact being that all this time offerings were pouring in to the priests. At a quarter to 1 A.M. the excitement was over and the throng dispersed.

Next morning (Sunday) the collector and policeman gave the order to haul Balabhadra along the street, and the three great ropes six inches thick were lined by willing men and women. Three hundred were at one rope, and then hundreds fanned the god 20 and 30 yards away, hoping that this work of supererogation would be put to their credit in the eternal bank.

On Monday, the 17th of July, both Subhadrá and Jagannáth were pulled half a mile along the Bara Dhan. Every one in the street wore a contented smile, because he knew that he had worked out his own salvation. . . . The poor Hindu had accomplished the dream of a lifetime ; he had gazed on the face of Jagannáth ; he had pulled his car ; he had paid four pice (1*d.*) for a linoleum painting of the trinity, and this would interest his children for years to come. It would be an heirloom. . . . On Tuesday, the 18th, the three cars were dragged a considerable distance, but most of the pilgrims were already on the way to their homes and the priests were left to count up their gains.

THE FRENCH TREATY WITH SIAM.—The *Revue Française*, of October 15, publishes the text of the treaty signed at Bangkok, on the 1st of October, by the French and the Siamese plenipotentiaries.

By the 1st Article Siam renounces her claim to the territory on the left (eastern) bank of the Mekong, and to the islands in the river.

By the 2d Article Siam agrees neither to keep nor to navigate any armed boat or vessel on the Great Lake (Toulé-Sap), or the Mekong, or their tributaries in the provinces of Battambang and Sien-Reap ; and the 3d Article binds the Siamese government not to construct any fortified post or military establishment in either of these provinces, or within a radius of 25 kilometres (15.53 miles) on the right bank of the Mekong. No armed force is to be maintained by Siam in the districts named in the 3d Article (Art. 4), and

the police service will be carried on as usual by the local authorities.

Until an agreement is made between the two governments with regard to the commercial regulation of the districts named in Article 3, no duties shall be therein levied; and the Siamese government agrees, by the 5th Article, to open negotiations for the said regulation within six months.

Article 6 reads: "As the development of the navigation of the Mekong may render necessary certain works on the right bank, or the establishment of relay stations for boats and depôts of wood and coal, the Siamese government binds itself to give, on the request of the French government, all the necessary facilities for this purpose."

By Article 7 French citizens, and those subject to French jurisdiction, shall be free to travel and carry on their business in the territories mentioned in Article 3, when provided with a pass from the French authorities; and reciprocity will be accorded to the inhabitants of the said territories.

By Article 8 the French government reserves the right to establish consulates where it shall think proper for the interest of French citizens, subjects or dependents, and particularly at Korat and at Muang-Nam. The Siamese government shall grant the sites necessary for the said consulates.

In case of difficulties arising, the French text shall be the sole authority (Article 9).

Article 10 provides that the treaty must be ratified within four months from the day of its signature.

The provisions of the treaty are, perhaps, more satis-

factory to France than to Siam; and it is easy to imagine that many things may be done hereafter in virtue of the significant 6th Article.

FATHER HUC AND HIS CRITICS.*—Prince Henri d'Orléans has reprinted in this little book articles contributed by him to the *Revue Française* and the *T'oung-pao* in defence of Father Huc's truthfulness in his *Travels in Tartary and Tibet*. When this book of travel was published, in 1851, it was received with a certain amount of incredulity, but the only serious attack made upon it was by Prjevalsky, who visited the same regions twenty years after Huc and Gabet's famous journey. The Russian traveller must be supposed to have meant what he said when he declared that Father Huc's account of the country, after leaving the Koko Nor, was entirely false. Prjevalsky's authority as a scientific explorer has so far prevailed with many geographers, notwithstanding the vindication of Huc by the English scholars Ney Elias, Col. Yule and others, that Prince Henri has been impelled to give his own testimony. In his travels in Tibet he found himself in districts for which Father Huc's volumes furnished the only available European source of information; and he was always surprised at the missionary's accuracy, the fidelity of his descriptions and his precision with respect to the smallest details.

Similar testimony is borne by Mr. Rockhill in his *Land of the Lamas*, pp. 125, 126. He says that Huc frequently embellishes,† but that he never invents, and

* *Le Père Huc et Ses Critiques*, Par Henri-Ph. d'Orléans. 8°. Calmann Lévy, Paris, 1893.

† Prince Henri, or his printer, translates the word *embellished*, in Mr. Rockhill's remarks, by *emballé* (packed).

that, altogether, his work cannot be too highly praised, and that if it had been properly edited, with explanatory notes, accusations like those made by Prjevalsky would have found no acceptance.

THE GREAT EARTHQUAKE OF JAPAN IN 1891.*—Twenty-eight of the photographs reproduced in this volume represent scenes of ruin caused by the convulsion of 1891, and it adds to the interest of the views to know that they are printed on paper, which is manufactured only in Echizen, in the earthquake district.

Japan is shaken every year by at least five hundred earthquakes, and in some years one or two thousand shocks are added to the average number.

Besides earthquakes, volcanic explosions threaten certain sections of the country. There are three lines of weakness through which the volcanic forces have made their way. The first—at least 1000 miles long—comes from Kamtchatka through the Kurile Islands and Yesso down to Nippon. Here it is met almost at right angles, by a second line about 1500 miles in length, coming from the Ladrone Islands through the Bonin group. The third line runs from the Philippines through Formosa to the centre of Kiushiu, where it terminates in Asosan, a volcano with a ring-formed crater ten miles in diameter.

The earthquakes are most frequent along the east coast of Japan. They do not come from the volcanoes

* The Great Earthquake of Japan, 1891. By John Milne, F.R.S., Professor of Mining and Geology, Imperial University of Japan, and W. K. Burton, C. E., Professor of Sanitary Engineering, Imperial University of Japan. With Plates by K. Ogawa. Lane, Crawford & Co., Yokohama, Japan. Long 4°.

and their frequency shows no relationship to the volcanic action.

The disaster of 1891 occurred on the 28th of October, in the centre of the empire, in the prefectures of Aichi and Gifu. The disturbance was very widely felt, but the destruction of buildings and engineering works was chiefly within an area of 4200 square miles. About 10,000 persons lost their lives, 15,000 were wounded, and 100,000 houses were levelled. The waves of motion were short and rapid, the ground was fissured, and small mud volcanoes were created.

In Tokyo, more than 200 miles from the centre of action, the ground moved in long, easy undulations, like those of a raft rising and falling on an ocean swell. The plates which give the liveliest idea of this great convulsion are No. X., which shows a line of railway twisted from side to side for a long distance, and No. XXVI., in which the Nagara Gawa Railway Bridge is broken up into sections, lying at various angles.

THE TUNISIAN GEOGRAPHICAL SOCIETY.—The *Revue Française*, of Nov. 1, notices the formation of the *Société de Géographie de Tunisie*, with the following officers: Hon. Pres't, M. Ch. Rouvier, French Resident; Pres't, Commandant Servonnet, naval attaché to the Residency; Vice-Pres'ts, MM. Auguste Pavy and Dr. Bertholon; Secretary, M. E. Benoît.

It is to be supposed, though it is not stated, that the Society is established at Tunis.

EGYPTIAN IRRIGATION.—It was announced on the 31st of October that the Egyptian Under-Secretary of State for Public Works would proceed up the Nile

towards the end of November to prepare himself for giving a final opinion upon the five schemes for the construction of a great reservoir in Upper Egypt; and that the Government would ask the Powers to concur in the appointment of a Commission of European experts to visit Egypt early in 1894, in order to make a definite selection of the best scheme.

ENGLISH AND GERMAN WEST AFRICA.—The text of the Anglo-German Agreement, respecting the *hinterland* of the territories claimed by Great Britain and Germany back of their colonies on the Gulf of Guinea, has been published in England, as follows :

Article 1.—The agreement of 1886 having stipulated that the point where the boundary shall reach the river Benue shall be fixed to such a point to the east of, and close to, Yola, as may be found on examination to be practically suited for the demarcation of a boundary, that point shall be fixed as follows :—The boundary drawn from the point on the right bank of the Old Calabar or Cross River, about 9° 8' longitude east of Greenwich, marked "Rapids" in the English Admiralty chart referred to in the agreement of 1885, shall follow a straight line directed towards the centre of the present town of Yola. From that centre a measuring line shall be drawn to a point on the left bank of the river Benue five kilometres below the centre of the main mouth of the river Faro; from the latter point the circumference of a circle, the centre of which is that of the present town of Yola, and the radius of which is the aforesaid measuring line, shall be described, south of the Benue, continuing till it shall meet the straight line drawn from the Old Calabar or Cross River. The boundary deflecting from that straight line at this point of intersection shall follow the circumference of the circle till it shall arrive at the point where the circumference reaches the Benue. This point on the Benue shall henceforth be accepted as the point to the east of, and close to, Yola, mentioned in the agreement of 1886.

Article 2.—The boundary determined in the preceding Article shall be continued northward as follows :—A line shall be drawn from the point on the left bank of the river Benue fixed in that Article, which, crossing the river, shall go direct to the point where the 13th degree of longitude east of Greenwich is intersected by the 10th degree of north latitude. From that point it shall go direct to a point on the southern shore of Lake Tchad, situated 35' east of the meridian of the centre of the town of Kuka, this being the distance between the meridian of Kuka and the 14th meridian east of Greenwich, measured on the map published in the German Colonial Atlas of 1892.

In the event of future surveys showing that a point so fixed assigns to the British sphere a less proportion of the southern shore of Lake Tchad than is shown in the aforesaid map, a new terminal point making good such deficiency, and as far as possible, in accordance with that at present indicated, shall be fixed as soon as possible by mutual agreement. Until such agreement is arrived at, the point on the southern shore of Lake Tchad, situated 35' east of the meridian of the centre of the town of Kuka, shall be the terminal point.

Article 3.—Any part of the line of demarcation traced in this agreement, and in the preceding agreements, shall be subject to rectification by agreement between the two Powers.

Article 4.—The territories to the west of the boundary line traced in the present agreement shall fall within the British sphere of influence, and those to the east of the line shall fall within the German sphere of interest.

It is, however, agreed that the influence of Germany, in respect to her relations with Great Britain, shall not extend eastwards beyond the basin of the river Shari, and that Darfur, Kordofan, and Bahr-el-Ghazal, as defined in the map published in October, 1891, by Justus Perthes, shall be excluded from her influence, even if affluents of the Shari shall be found to lie within them.

Article 5.—The two Powers make, as regards the extended spheres of influence traced in the present agreement, a similar engagement, as regards their respective spheres, to that taken in the preceding agreements.

They agree that neither will interfere with the sphere of influence of the other; and that one Power will not, in the sphere of the other, make acquisitions, conclude treaties, accept sovereign rights, or protectorates, or hinder or dispute the influence of the other.

Article 6.—Great Britain recognizes her obligation to apply, as regards the portion of the waters of the Niger and its affluents under her sovereignty or protection, the provisions relating to freedom of navigation enumerated in Articles 26, 27, 28, 29, 30, and 33 of the Act of Berlin of February 26, 1885. Germany on her side recognizes her obligation, under Article 32, to be bound by those provisions as regards the portion of the waters under her control.

This agreement will hardly be admitted by France, which has claims on Adamaua and on other countries here divided. The treaty of Dec. 24, 1885, between France and Germany assigned to the former Power the territories south of a line following the Campo River *from its mouth up to a point where it meets the meridian of 7° 40' east of Paris, and from that point following the parallel up to its meeting with the meridian of 12° 40' east of Paris.** Since that time the French have made

* Paris is 2° 20' 14" east of Greenwich. The Campo river flows in a general southwesterly direction and enters the Gulf of Guinea in 2° 20' N. Lat.

treaties with tribes on the Shari river and have annexed the valley of the Sanga.

There will be discussion before Germany finds herself in a position to profit by the generosity of England.

ENGLISH AND GERMAN EAST AFRICA.—The British Government has made public the text of the agreement between Great Britain and Germany respecting their boundaries in East Africa.

This agreement was signed at Berlin on the 25th of July, 1893. It provides that the boundary from the Indian Ocean to the northern side of Kilima-Njaro shall start on the coast from high-water mark on Ras Jimbo, and run thence in a straight line to the point at which the parallel of $3^{\circ} 40' 40.3''$ S. cuts the eastern bank of Lake Jipe. On the coast, however, the line is to be deflected along the northern bank of the Jimbo Creek, so as to leave the foreshore in the British sphere as far as the eastern mouth of the Ngobwe Ndogo. The line then follows the Ngobwe Creek to its end, and runs to the point where the straight line from the coast strikes the rising ground on which the village of Jasini stands.

At Lake Jipe the boundary follows the eastern shore and then the northern shore, to the northern bank of the Rufu River to a point an English mile east of the German road from Marangu to the coast.

From the Rufu River it is to run to the summit of Chala Hill, then through the Chala Lake and straight to the Useri camp, at the base of Kilimanjaro.

Five maps show the boundary and the preliminary surveys.

The limit as described is, with slight modifications, the one laid down in Map No. 4, of Kiepert's *Deutscher Kolonial-Atlas*, issued at the beginning of this year.

MATABELELAND.—The Matabele country is a tableland lying between 18° and 22° S. Lat. and 27° and 32° E. Long. It has a healthful climate, and a fertile soil watered by streams, which flow on the south towards the Limpopo and on the north to the Zambezi; and it is said to be rich in gold. Like Mashonaland, which the Matabele claim as their own, Matabeleland lies within the sphere of the British South Africa Company's activity, as that sphere is defined in the language, less precise than liberal, of the charter, in these terms :

"The principal field of the operations of the British South Africa Company shall be the region of South Africa lying immediately to the north of British Bechuanaland, and to the north and west of the South African Republic, and to the west of the Portuguese dominions."

Southwest of Matabeleland lies the kingdom of Khama, who is lending his aid to the South Africa Company.

The Matabele are descended from a Zulu tribe which emigrated to the north in 1835, and they form a well-organized military state, always prepared for a raid upon its neighbors. Dr. Emil Holub, the Austrian traveller, describes their discipline as Spartan in its severity. They are, he says, soldiers and that only. They form the *élite* of the native fighting men of South Africa; and he estimates that at least 150,000 human beings have perished in their annual raids, in which they kill the men and capture only women, boys, and cattle.



MAP OF THE TERRITORIES COMPANY.

This testimony agrees with that of all those who are acquainted with the Matabele. The Rev. A. M. Hartman, S. J., who lived as a missionary in Matabeleland for three years, declares that unless a stop is put to the cruelties of the Matabele, the Mashonas, their principal victims, will be exterminated. He adds :

Every care is taken that the warlike spirit of the nation is kept up. Means for this are:—

a. Their war songs are constantly on their lips.

b. The big war dance, kept every year at Buluwayo, where all the regiments meet together, feasting on beef and beer.

c. The very rites they perform at that festival have no other object but to inspire them with fearless courage. At this occasion human flesh is cooked, together with various kinds of medicines. This human flesh is taken from slain people. Superstition plays a great part in the performance of those ceremonies, all of which have relation to their war expeditions.

The old indunas fan the flames of bloodthirst by sarcasm and irony. "You are but girls," they say to the young warriors and "beardless boys," "How is it that you never yet bathed your assegais with human blood?" etc. In general, cowardice is looked upon as the greatest disgrace a Matabele can bring on himself.

Those who have known Lobengula, the king of this bloodthirsty nation, do not agree in their opinions of his character.

According to some he is a monster of cruelty and perfidy ; but others have better words for him, and the evidence of Mr. Harold Crichton Browne is wholly in his favor. That gentleman says, in a letter written to the London *Times* from the Garrick Club, on the 15th of October :

"I was practically taken prisoner and conducted to his capital when trespassing in his territories, where I had no business to be, and when occupied in a way that might reasonably have given rise to suspicion (I was photographing and making notes for maps), and had I been assegaied on the spot I should, if I may be permitted the Hibernianism, have had no valid objection to offer. But I was treated with great kindness, and was courteously received by the king, and feel bound therefore to protest against the representation of him as a wholesale butcher, delighting in his trade."

Lobengula and his people, like most savages, take

themselves seriously and think they have a mission to perform. It might surprise them, if they could be made to understand it, to see the map which the British South Africa Company published in November. In this map the Company assigns to itself, from motives of practical philanthropy, all the territory lying between the Limpopo and the Zambezi rivers and extending to the eastward as far as the meridian of 33° E. Long. This includes the kingdom of Lobengula as well as Mashonaland ; and it is said that the protection of the Mashonas against their fierce neighbors was the consideration that moved the South Africa Company to begin the war, which seems likely to open a field for enterprise and to add also, in the fulness of time, a colony to the British Empire.

Whether the gold-reefs prove to be extraordinarily rich or not, it will be a gain to the cause of humanity to restrain the Matabele, as the English will restrain them, from working their pleasure upon an inferior race ; the English themselves being set free, by civilization and the lofty sense of duty, from the temptation to abuse their own power.

The warlike nature of the Matabele may be so far modified, under control, as to make them energetic workers in the development of British South Africa ; and it may be hoped that in a few years they will have ceased to dream of bathing their assegais, and will have learned of their civilized conquerors to draw first blood and to flesh their maiden swords.

It was while the crusade against the Matabele occupied the public mind that Capt. Lugard, in his book, *The Rise of Our East African Empire*, denounced the

slave trade now carried on in the British Protectorate of Zanzibar. The indifference to the wrongs of the East African negroes living under the English flag offers a painful contrast to the fiery zeal for the protection of the innocent Mashonas, though it may be explained by the fact that Zanzibar is a recognized British possession, while the country of the Matabele is a desirable domain yet to be acquired.

Contrasts are not wanting in the record of the English excitement concerning the Matabele war, and one of the most impressive is presented in the following utterances :

The Bishop of Derry, in a sermon preached in Westminster Abbey on the 21st of September, said that he longed to see Mashonaland open to civilization and to the missionaries of the Cross. He believed we should not tell the few brave men in that far land

"to act out the Sermon on the Mount whenever it was advantageous to them, but if they found the contrary course advantageous to drop it and have recourse to the sword."

If the Bishop forgets who was the Author of the Sermon on the Mount, others remember Him. On the 7th of November, Mr. J. E. Ellis, M.P., presented to Mr. Gladstone the following memorial, signed by the Clerk of the quarterly meeting of the Society of Friends :

"We have been deeply pained by the information communicated in the public Press of the appalling slaughter which has taken place in Matabeleland by the armed forces of the Chartered Company of South Africa. We strongly feel that such methods of prosecuting commercial enterprise are entirely incompatible with the Christian religion, and we regard it as a disgrace to our nation's profession of Christianity that in this, as in so many preceding instances, the settlement of our countrymen as colonists in uncivilized lands has been accompanied by wars of extermination. We would press upon the Government the importance in any future arrangements of doing nothing to sanction or facilitate such military inter-

ference with the rights and liberties of native races, children with ourselves of one common Father. In view of the responsibilities now devolving on our Government, we trust that its action may be directed to insuring the treatment of the Matabele, not in a spirit of hostility and greed, but of justice, humanity, and mercy. We believe that this policy of justice and humanity is not only right in itself, but is absolutely essential if Great Britain is to be able with any effect to exercise her influence to prevent similar high-handed encroachment on native races by other civilized Powers."

THE ELDER EXPLORING EXPEDITION.—Vol. XVI. of the *Transactions* of the Royal Society of South Australia is reserved for the scientific results of the Elder Expedition of 1891, in South and West Australia. Of this volume Parts I. and II. have been issued. These contain Reports on the Vegetable Exudations, among which is a true Manna (*Myoporum platycarpum*), the first announced from Australia; on Lepidoptera, few in number; on Coleoptera, more numerous, and among them a *Scaritid*, which Mr. Blackburn proposes to call the *Trichocarenium Elderi*; on Land and Fresh-water Mollusca, of which seven species were collected; on Hymenoptera; on the Geology of the region traversed, with a list of rock specimens from east of the Murchison Goldfield; on the Meteorology, with detailed observations for every day, through nine months; on the Lichenes and Fungi, and on the Orthoptera and the Vertebrata. Of these last the most numerous are the lizards, of which thirty-seven species were collected. Four of these were previously unknown: *Diplodactylus Elderi*, the *Amphibolurus scutulatus*, the *Egernia Kintorei* (named in honor of the Earl of Kintore), and the *Lygosoma melanops*.

The two Parts are illustrated by seven plates and a large colored map, showing the geology of the route from Peake Telegraph Station to Annean Station.

WASHINGTON LETTER.

WASHINGTON, Dec. 28, 1893.

ARCTIC EXPLORATION.—An expedition has been proposed having for its object the exploration of the unknown coast west of Ellesmere Land, the eastern strip of which only is represented on the charts of that part of the world. The party of explorers will be led by Mr. Robert Stein of the U. S. Geological Survey. Mr. Stein submitted his plan to the Board of Managers of the National Geographic Society for an opinion. A committee of that Society was appointed, consisting of Gen. A. W. Greely, Mr. W. J. McGee, and Mr. Marcus Baker, to whom were afterward added Commodore G. W. Melville, engineer-in-chief, U. S. Navy, and Dr. W. H. Dall. The report of the committee, presented and adopted December 8, is of general interest. It says:

“The plan contemplates the occupation of a station on the shores of Ellesmere Land in Jones Sound for about fifteen months, from, say, July, 1894, to September, 1895. Equipments for permanent camp, coast and inland explorations, and food supplies for two years are to be taken with the party, which will be landed at the designated point by a Scotch or Newfoundland whaler in 1894, and taken off by the same vessel in the autumn of 1895. At the camp observations will be made of terrestrial magnetism, meteorology and hydrography, while geological researches can be made in connection with the explorations of the adjacent unknown regions about Jones Sound and Belcher Channel. The estimated cost of the expedition is \$10,000.

“Concerning this project your committee unanimously concur as to the following propositions:

“(1) They believe that this expedition to a point lying in the path of the whalers who annually visit the western waters of Baffin Bay is thoroughly safe and practicable; that it is desirable for scientific purposes and for geographic exploration; and that no part of the Arctic regions gives promise of greater opportunities for extensive discoveries, with a minimum of danger, hardship and expense.

"(2) They believe that the estimate of \$10,000 is sufficient to cover the necessary expenses, but that the returns from the expedition could be materially enlarged by an additional sum of \$3000 to \$4000.

"(3) The detailed data and plan presented by Mr. Stein favorably impress the committee as to his energy, persistence and knowledge of the problems involved in the project. They believe, however, that the selection of the personnel and the fitting out of the expedition should be made under the advice of three recognized experts, one regarding maritime outfit, one on scientific outfit, and a third for regular supplies and land explorations.

"(4) Your committee recommend that there be appropriated out of the treasury of the National Geographic Society such sum as the Board may see fit, at the proper time, in aid of this expedition."

Gen. Greely, Commodore Melville, and Dr. T. C. Mendenhall have consented to act as advisers, in accordance with the committee's recommendation.

In connection herewith, the following letter, from Colonel H. W. Feilden, naturalist to the Nares expedition of 1875-76, may be of interest :

"MY DEAR SIR : I told you in my last that I had written to Sir George Nares, enclosing your prospectus. I also sent him one of your letters to read. I heard from him this morning, and he writes, 'Stein is evidently on the right track.'

"If I can assist you further, let me know. I take the same interest in American Arctic enterprise as in British ones, and my good wishes and sympathies are as cordial as if your expedition carried the Union Jack instead of the Stars and Stripes. I will tell you a tale in connection with Arctic story, that I do not think has ever seen the light.

When Aldrich returned to the ship from his wonderful sledge journey round the north shore of Grinnell Land in 1876, we were discussing at the ward-room table a suitable name for the northernmost point of land he had reached. Various names were suggested, but I well remember Sir George Nares silencing us, by saying, 'This is the northernmost point of America yet reached ; remember what Americans have already done in Smith Sound. I shall therefore dedicate the highest point yet reached in America to our kinsmen ; I shall call it 'Cape Columbia.' and Sir George's decision was received with acclamation.

"Believe me to be, very truly yours,

H. W. FEILDEN."

The expedition will turn to the westward of Baffin's Bay, skirting the southern extremity of Ellesmere Land. Former explorers have pursued their way towards the Pole through the channels which divide the Ellesmere-Grinnell-Grant Land from Greenland, while the

western shore of Ellesmere-Grinnell Land has been neglected, except one point touched by Lockwood and Brainard.

Mr. Stein does not believe it is necessary to defend Polar exploration. He believes that the main objects of these routes into the Arctic sea justify the discomforts and dangers which are too often the only reward of the explorer. He points out that the meteorology of the Arctic forms the keystone of the whole science of the weather. The science of geodesy will remain imperfect until the pendulum has been swung close to the very Pole. Important additions to the science of magnetism may be looked for from researches in the vicinity of the Magnetic Pole. Especially the fascinating phenomenon of the aurora, the grandest instance of light without heat, may yield remarkable disclosures when studied in the area of its greatest intensity.

Mr. Stein proposes to start next May, and to trace this unknown shore, so far as can be done in one summer, from a base of operations always within easy reach. That base of operations will be at the entrance of Jones' Sound, on the route pursued by the whaling steamers which annually frequent the whaling grounds in Lancaster Sound, about eighty miles south of Jones' Sound. A party of not less than eight men will leave St. John's, Newfoundland, on one of these whaling steamers in May, 1894, and return in October of the same year. At the base the party will erect a house fit to winter in, should occasion arise, with provisions enough for two years. Two men will remain to guard the depot and make observations. The others will travel westward and northward along the unknown

shore as far as they can go. A preliminary trip of two weeks will determine the best mode of travel, and will serve at the same time to establish an advance depot. At the end of eighty days the explorers will be back at the base.

An unexpected addition of interest accrues to this project from the advices received from Dundee concerning the wreck of the schooner *Ripple*. If the crew of that schooner, five in number, among them the young Swedish naturalists Björling and Kalstennius, still survive, they are almost certainly on Ellesmere Land, near the point where Mr. Stein expects to land. No other relief expedition could reach them any sooner than the whaler which is to convey Mr. Stein's party to their base of operations, so that whatever is possible in the way of rescue will certainly be accomplished by this expedition.

TOPOGRAPHIC MAP OF THE UNITED STATES.—The past year has proved an extremely successful one for the prosecution of topographic work by the United States Geological Survey. The season has been long, extending from May to November, with exceptionably few bad days, so that the output of the work has been proportionately great.

Thirty-three surveying parties have been maintained, scattered over the country from New York to California. Altogether 134 sheets have been surveyed, of which 118 were upon a scale of one mile to one inch; the remaining 16 being upon a scale of two miles to one inch. The area comprised in these is about 33,500 square miles.

A little work has been done in the southern Appalachian region, mainly in the coal regions of the Cumberland plateau of Tennessee. Work has been done in the iron regions of northern Tennessee and Minnesota.

The most extensive operations have been conducted upon the great plains of the Dakotas, Nebraska, Kansas, Oklahoma and Texas, where eight parties have been at work, and where, owing to conditions very favorable for surveying, the output has been large. In North Dakota eleven sheets have been surveyed; in South Dakota thirteen sheets; in Nebraska three parties have surveyed no less than thirty-seven sheets; in Kansas four sheets, completing that part of the State which lies east of the 100th meridian; in Oklahoma eleven sheets, completing the original area which was open to the whites, together with considerable parts of the Cherokee strip and other adjacent territory. All these sheets are upon the scale of one mile to one inch. In Texas three sheets upon a scale of two miles to one inch have been surveyed.

In the Black Hills of South Dakota two sheets have been surveyed, practically completing the mountain country. In Montana two sheets upon the two mile scale, embracing the region recently set off as a timber reserve east of the National Park. In Colorado a small area upon the mile to an inch scale in the Gunnison country. In California four sheets about the peninsula and bay of San Francisco, and three sheets in southern California in the neighborhood of Los Angeles. In Oregon the equivalent of two sheets in the southwestern part of the State, and in Washington work has

been commenced upon the shores of Puget Sound. In Idaho 1000 square miles have been mapped in that *terra incognita*, the Salmon River mountains.

In the State of New York extensive operations have been carried on, the Legislature at its last session making an appropriation of \$24,000 for co-operating with the United States Geological Survey in the preparation of a survey of its area. About \$50,000, half of which has been expended by the United States, has been devoted to a survey of this State, and during the season twenty-seven sheets, all upon a scale of one mile to one inch, have been completed. These are scattered over different parts of the State—the Hudson and Mohawk valleys, the Adirondack, the neighborhood of Watertown, Rochester, Buffalo, Niagara Falls, and Ithaca. Altogether the season's work adds 5000 square miles to the mapped area of this State.

It is quite forty years since the commencement of the efforts of the American Geographical Society to secure an accurate map of the State of New York. The culmination of these efforts in the near future may be said to have had its origin in the movement made by the Society in 1875, in the appointment of a committee consisting of Samuel B. Ruggles, Elbridge T. Gerry, Francis A. Stout, William Remsen and James T. Gardner to urge the Governor and Legislature to sanction an accurate survey of the State. With the approval of Gov. Tilden, an act was passed in 1876 appropriating \$20,000 "for making an accurate trigonometric and topographical survey of the State." After eleven years the commissioners appointed under this act reported that the primary triangulation was com-

pleted for about two-thirds of the State, and recommended to the Legislature that the topographical work should be continued and finished with the coöperation of the United States Geological Survey. This proposition was approved by the State authorities. The results, as seen above, are being rapidly developed.

Other States have similarly taken advantage of the propositions of the General Government to aid in securing accurate topographical delineations of the whole of the United States. The plan is an admirable one, both parties being immensely interested in the prosecution and earliest possible completion of the work. The saving in time may be counted by decades, while the saving in money by the division of expenses brings the work within the reach of every State in the Union. The surveys of Massachusetts, New Jersey, Connecticut and Rhode Island have been completed, and the map sheets are available in portfolio, atlas, or wall map form, each State having a supply at its own disposal.

The value of this topographic work which is being prosecuted so actively throughout the country has been shown by the great and increasing demand for the maps by all kinds of industrial enterprises.

In the geologic branch of the survey, owing to large reductions in appropriations by Congress, there was during the year extensive reorganization and curtailment of work. The energies of the force were almost wholly given to completing office work on field observations already made and data gathered. This resulted in the completion of a large number of geologic atlas sheets. No field work was done in the paleontologic branch. Work in chemistry was confined to the absolutely essen-

tial routine analyses needful in connection with the work of the geologists. The work on the physical characteristics of rocks and in terrestrial physics, which has yielded many valuable and interesting results, was entirely discontinued.

The Secretary of the Interior, in reviewing the work of the Geological Survey, says :

"The value to scholars, engineers, miners and to commerce of the work carried on by the Geological Survey is attested by the growing demand for its maps, memoirs and reports, and by the increased value of the mineral product of the country, which has increased at a much higher rate than the increase in population, largely aided, it is believed, by scientific direction and official research."

TOPOGRAPHIC MAP OF BALTIMORE.—The authorities of the city of Baltimore are engaged on a topographic survey of that city, which when completed will place her in rank of the very few cities of the world with an exact survey. The data furnished will be second to none in the country. The scale of proportions will be 200 feet to one inch, or, decimally, 1:2400. It will be a contoured map, showing the differences of level of every five feet. The built-up portion of the city will be represented in addition upon a very large property map, on which one inch will represent only 40 feet of ground space.

NORTH PACIFIC PILOT CHART.—This important project of the Hydrographic Office awaits an appropriation by Congress to cover the expense—about \$10,-

ooo. No publication of this office has the popularity of the North Atlantic Chart, which the Pacific Chart will in many respects resemble; such as the ice fields and bergs, routes for steamships between American and Asiatic ports, predictions as to weather, warnings of storms, drift of derelicts, the most serious of all dangers encountered by navigators; unusual information respecting the fishing ground off the coast of Alaska and eastern Siberia, areas of fog and rain.*

The Navy Department has arranged to clear the path of navigation between New York and the mouth of the Mississippi of all wrecks and derelicts that may be regarded as dangerous. The British Government has promised to co-operate in this movement for the safety of navigation, and will despatch a vessel on a similar errand on the path usually followed by trans-Atlantic steamers.

NORTH ATLANTIC PILOT CHART.—This chart for January has improved and valuable new features. First of all a base chart of improved execution, and printed on better paper than formerly. The added features are, U. S. weather and temperature signals; improved delineation of the U. S. storm signals; European gale and storm signals; lines of equal magnetic variation for every degree; a method of delineating reports concerning ice; a storm-track gauge; a method of delineating the region of equatorial rains; and an improved land tint. It should be known as the New Pilot Chart.

* Since the above was written the Hydrographic office has issued "The Proposed North Pacific Pilot Chart, January, 1894."
H.

NEW GEOGRAPHY.—The explorations of the U. S. Fish Commission steamer *Albatross* during 1889–91 as described by Lieut.-Commander Z. L. Tanner, and recently published by the Fish Commission, extended from Bering Sea to Central America and the Galápagos Islands. The investigations in Alaskan waters and on and about the Galápagos Islands are important in scientific results and full of geographic interest. Prof. Alexander Agassiz has prepared and published* the general sketch of the expedition and operations in dredging off the west coast of Central America to the Galápagos, to the west coast of Mexico, and in the Gulf of California from February to May, 1891.

Prof. Robert E. C. Stearns prefaces a report on the mollusk-fauna of the Galápagos Islands† with an account of the geographical and physical characteristics of the islands; also a discussion of their volcanic origin or origin through subsidence, climatology, etc.

Prof. Dall ‡ describes a large body of water known as the Gulf of Penjinsk, lying in the northeastern angle of the Okhotsk Sea. It extends in a northeast and southwest direction for about 300 miles, and has a greatest width of 140 miles. As far as recorded, this arm of the Okhotsk Sea has not been visited by a scientific explorer.

BOUNDARIES.—The boundary lines of the Yellowstone Park remain unmarked after a lapse of more than twenty years since the region was set apart. There are also some undetermined questions as to the location

* Bulletin Museum of Comparative Zoology, Harvard College, Vol. XXIII., No. 1.

† Proceedings of the U. S. National Museum, Vol. XVI.

‡ Proceedings of the U. S. National Museum, Vol. XVI.

of portions of the northern and western boundaries. Capt. Anderson, U. S. A., in charge of the Park, speaking of the accommodations for travellers and visitors, says: "The prices are lower than obtain in any of the first-class summer resorts of the country," and he sees no reason why a stay in the Park, rather than a tour of it, should not be the rule. He recommends the preparation and publication of a popular description of the Reservation and its wonders, in order to familiarize the people with this remarkable region. In Germany the pupils of the common schools are taught of this Park, and the result is abundantly shown in the large number of Germans who annually visit it.

The boundaries of Sequoia Park (a tract 24 miles long, by from 6 to 12 miles wide, in a S. E. direction from Fresno, California) have never been run. Moreover the region is inaccessible, owing to the absence of roads or practically even of trails. The Giant Forest—the great feature of this Park—is probably the most magnificent body of timber in the world. It occupies an area of about 3 miles square on an elevated plateau east of the Marble Fork. Capt. James Parker, U. S. A., in charge of this Reservation, says: "It is a continuous, dense forest of splendid trees, nearly all towering 300 feet or more. The giant Sequoia, with its tremendous trunks, 15 to 25 feet in diameter, and shafts whose first branches leave the trunks at parts higher than the highest church steeples, here attains its finest growth and greatest dimensions."

The boundary line between North and South Dakota has been ascertained, surveyed and distinctly marked by suitable and permanent monuments.

The preliminary surveys needed for the location of the Northwestern boundary line between the United States and Canada are advancing towards completion. The same may be said as to the boundary line between Alaska and British Columbia ; both under the direction of the Coast Survey. The same office has begun surveys for the location of the boundary line between California and Nevada from Lake Tahoe to the Colorado River; and for the adjustment of the line between Pennsylvania and Delaware.

The Government has sanctioned and made obligatory the use of the metric system of weights and measures in all transactions at United States custom-houses, and Prof. Mendenhall suggests July 1, 1895, as a suitable date for the inauguration of this reform.

The Coast Survey and the Hydrographic Office have each issued revised editions of catalogues of their charts and other publications.

It is suggested that the Arizona petrified forest, located in the eastern portion of Central Arizona, near Holbrook, on the Atlantic and Pacific Railroad, be set aside as a national park. It is estimated that there are about 10,000 acres in the forest, which consists of huge logs from six feet down in diameter. The ground is nearly all covered with trunks and limbs of petrified trees of every size and color, quantities of which have been removed for ornamental purposes.

It is said to be the most wonderful and beautiful centre of petrified woods known to scientists.

NICARAGUA CANAL.—It is stated that the Commerce Committee of the House of Representatives unanimously favor the proposition of governmental control of

the Nicaragua Canal. In the Senate a resolution has been adopted providing for a Joint Commission to go to Nicaragua for the purpose of examining the state of the work on the canal, so as to report to Congress on the advisability of the Government taking charge of the enterprise. The resolution provides for the appointment of a Committee of three Senators and three Representatives to examine into and report upon the present condition of the canal and the prospect of the completion of the work under the control and with the means to be raised by the Company, and such other matters connected with the construction and control of the canal as may better enable Congress to determine what legislation, if any, is proper and necessary for the prosecution of the work and the general advantage of the people of the United States. The Commission may proceed to Nicaragua and Costa Rica and conduct its examinations, accompanied by a detail of army or navy officers and other necessary employés. Senator Frye argued that the Government could build the canal for \$75,000,000 ; that the bonds would sell readily while paying an interest of only 4 per cent., and that Government control would permit a lowering of rates to \$1.00 a ton, and a profit would result at that figure. He regretted, as did Senator Morgan, the failure of the Senate in 1885 to ratify the Frelinghuysen treaty with Nicaragua, by the terms of which the United States would have secured a strip of land twelve miles wide, connecting both oceans, that would have been invaluable to us. It is said that that treaty lacked but one vote of the necessary two-thirds vote, which would have secured its ratification.

HISTORICAL MANUSCRIPTS IN THE DEPARTMENT OF STATE.—The historical manuscripts belonging to the Federal Government and preserved in the Bureau of Rolls, Department of State, have never been adequately described, catalogued, or indexed. Nor is there a general knowledge or appreciation of the inestimable value of this collection. It embraces the records and papers of the Continental Congress (bound in about 400 volumes); the public and private letters and other papers of Washington before and from the beginning to the end of the Revolution, and from that date coming down to the end of his life; his journals, diaries, and original letters received by him; the papers of Franklin, Madison, Monroe; the collected papers of various public men; letters and papers appertaining to or forming part of the archives of the Convention which formed the Constitution of the United States; records of the early States and Territories, etc.

It has been the policy of the Department to make no display of these priceless treasures, nor to give the general public the slightest clue by catalogue, index, or otherwise of their contents.

But the dawn is near. There has recently been printed "Bulletin of the Bureau of Rolls and Library, Department of State, No. 1." A paragraph in the "Introductory Note" of this Bulletin says: "The most practicable plan for making known and utilizing the current miscellaneous index of the general collections—an index devoted to papers to the substance of which all clue is lacking—is found to be the publication of a series of Bulletins, the present being the initiatory number. . . . It may be found possible occasion-

ally to print a complete catalogue of some particular class or collection of papers." It is understood that calendars of the correspondence of Jefferson, Madison and Monroe are ready for the press—in fact the Monroe calendar and index is promised as Bulletin No. 2.

In the Bulletin just issued we find (1) a list (22 pages) indicating by numbers the present arrangement of the papers of the Continental Congress, beginning with its original or rough journals, from Sept. 5, 1774 to March 2, 1789, in 39 folio volumes, and the transcript of the journals from September 5, 1775 to January 20, 1779 in 10 vols. These journals have never been printed in full. A note on the fly leaf of volume I. of the transcript is as follows: "*N.B.* The passages and resolutions which in this and the following books are crossed were all passed by Congress; but a Committee having been appointed to revise the journals for publication, such parts as the House determined on the report of their Committee should not be published were ordered to be crossed or marked so as not to be transcribed for publication. As the crossing defaced the minutes, another mark was introduced which was by dots in the margin.—Chas. Thomson, Sec'y."

These journals are followed by the secret and "the more secret journals," in 10 volumes; History of the Confederation, 1775-1791; Letter books of the Presidents of the Congress—Henry Laurens, John Jay, Samuel Huntington, Thomas McKean, John Hanson, Elias Boudinot, Thomas Mifflin, Richard Henry Lee and Arthur St. Clair—5 vols.; Reports of various Committees of the Congress, and memorials, petitions and remonstrances, 41 vols.; Articles of Confederation;

(This volume contains the first drafts of a confederation by Franklin and Dickinson) ; Intercepted letters from zealous royalists and others, 2 vols.; Letters and papers of Thomas Paine. A series of letters from the Committees of Safety, and Governors of the several States, 15 vols.; Letters to the Presidents of Congress, on a great variety of important subjects, 24 vols ; Letters from American and foreign Ministers, Agents and Commissioners ; Reports and accounts of the Board of Treasury and Board of War, 1776-1789, 36 vols.; Letters from Generals Washington, Schuyler, Gates, Greene, Lafayette, Heath, Charles Lee, Lincoln, Moultrie, Putnam, Mercer, Sullivan, Howe, Wayne, St. Clair, Benedict Arnold, Stark, Armstrong, Pulaski, Steuben, DeKalb and others, during the period of the Revolution, 51 volumes.

The papers in the Bureau of Rolls being arranged by "chapters," we find next (2) in this Bulletin an index of Chapter A. This chapter covers the papers of the Continental Congress above described. The index extends from A to L, 77 pages.

The last paper (3) in this interesting Bulletin is a Documentary History of the Constitution, derived from the records in the Department of State 1786-1870: Chapter 1 ; being the period preceding the convention of 1787.

The publication of this Bulletin is a great concession, especially to the large class engaged in historical investigations. It is initiatory only, but will probably lead to large and highly satisfactory results. Mr. Andrew H. Allen, Chief of the Bureau, has had the direction and supervision of the work, the details of which have

been critically carried out by Mr. S. M. Hamilton and Miss Linda Lawrence.

The means at the disposal of the Department are entirely inadequate to provide an edition large enough for "general distribution." Prominent libraries will be supplied and individual applications will receive such attention as their merits seem to require. H.

OBITUARY.

REV. PHILIP SCHAFF, D.D., LL.D.

The Rev. Philip Schaff, Vice-President of the American Geographical Society, died at his residence in this city, October 20, 1893.

Dr. Schaff was born at Coire, in the Grisons, January 1, 1819, and received his education there and at Stuttgart, Tübingen, Halle and Berlin.

He took his degrees of Ph.D. and B.D. at the University of Berlin in 1841, and received the honorary degree of D.D. from the same University in 1854. He was a favorite pupil of Neander, and Gregory XVI. allowed him, during a winter spent in Rome, the privilege of working in the Vatican Library.

In 1842 he lectured in Berlin on Biblical Exegesis and Church History. In 1844 he was recommended by Neander, Krummacher and other scholars, to the Synod of the German Reformed Church in America as instructor in the Theological Seminary at Mercersburg, Pennsylvania. He was elected and entered upon his duties the same year; but his liberal sentiments excited opposition, and in 1845 he was tried on a charge of heresy and acquitted. He continued his labors at Mercersburg for nearly twenty years, and in 1862 became Professor of Ecclesiastical History at Andover, and afterwards filled the same chair at the Hartford Theological Institute. In 1870 he was called to the Union Theological Seminary in this city as Professor of Sacred

Literature, and he became Professor of Church History in the same institution in 1887.

Dr. Schaff was a man of unwearied activity, whether at home in America or during his frequent visits to Europe, for purposes of work or study. He was one of the founders and the Honorary Secretary of the American Branch of the Evangelical Alliance, and he was President of the American Committee on the revision of the King James Bible. In 1888 he founded the American Society of Church History, of which he was chosen President.

He was throughout his career an indefatigable student, and he wrote much and well, both in German and in English. Among his works are "The History of the Apostolical Church," issued in 1853; a "Sketch of the Political, Social, and Religious Character of the United States"; "Germany, its Universities, Theology, and Religion"; A German hymn book; "The Christ of the Apostles"; "The Person of Christ, with Replies to Strauss and Renan"; "The Civil War and the Overthrow of Slavery in America," "Christ in Song," "Revision of the English Version of the New Testament," "The Vatican Council," "History and Collection of Creeds of Christendom," "Harmony of the Reformed Confessions," "Through Bible Lands," a dictionary of the Bible; "Library of Religious Poetry," in editing which he was associated with Arthur Gilman; a "Companion to the Greek Testament and the English Version," "Historical Account of the Work of the American Committee of Revision of the English Version," "Christ and Christianity," and "Church and State in the United States, or the American Idea of

Religious Liberty and its Practical Effects." He also edited an adaptation of Lange's "Critical, Theological, and Homiletical Commentary on the Bible," and the "International Revision Commentary on the New Testament;" the "Select Library of Nicene and Post-Nicene Fathers," in 14 vols.; a second series, in conjunction with Principal Wace; the "Schaff-Herzog Cyclopædia of Religious Knowledge," and a Supplement, the "Encyclopædia of Living Divines," with the Rev. S. Macaulay Jackson, as co-editor. He was a member of many learned societies and a constant contributor to European and American periodicals.

In 1892 his health failed, but he soon rallied and applied himself with unabated energy to the labors in which he delighted. He was greatly interested in the Parliament of Religions at the Chicago Exposition, which he visited only a month before his death, that he might not lose the opportunity of raising his voice once more in the cause of religious toleration and religious liberty.

It was while confined to his house by increasing weakness that Dr. Schaff received from the Council of the University of the City of New York the degree of D.D., conferred upon him on the fiftieth anniversary of his first course of lectures, delivered in Berlin.

With all his learning and his devotion to serious concerns, there was nothing austere in Dr. Schaff. The frank simplicity of his bearing was the outcome of the sweet and genial nature that endeared him to all.

At a meeting of the Council of the American Geographical Society, held at their rooms, No. 11 West 29th Street, on Saturday, December 2, 1893, the fol-

lowing Resolution, offered by President Daly, was unanimously adopted and, on motion, it was ordered that a copy of the same be engrossed and transmitted to the family of Dr. Schaff :

Resolved, That in the death of our late Vice-President, the Rev. Philip Schaff, this Society has lost a capable officer, and a most attentive and earnest member, and the world a great scholar. Eminent as an historian, whose history of the Christian Church, from the thoroughness of its execution and the clearness of its style, has been pronounced by the Theological Faculty of the University of Berlin the most notable monument of universal historical learning produced by the school of Neander, he combined with this erudition an extensive knowledge of ancient and mediæval geography, and took a deep interest in the geographical explorations, and the discoveries in physical geography, that have been so characteristic a feature of the present century:

That as the author of eleven works in German, and twenty-three in English, and as the editor of others with critical notes and translations, one of them of twenty-five volumes, besides addresses, reports and pamphlets, he went through an amount of intellectual labor and research rarely achieved within the limits of a life-time :

That in his writings, whether theological, political or literary, he was distinguished by a breadth of view and a most tolerant spirit, and that from his innate modesty in respect to his acquisitions, the amenity of his character, and the courtesy of his manner, he was an example in the fullest sense of a Christian gentleman.

SIR SAMUEL W. BAKER.

Sir Samuel White Baker, M.A., F.R.G.S., died on the 30th of December, 1893, at Newton Abbot, Devonshire.

He was born in London, June 8, 1821, and was educated there and in Germany.

In 1847 he founded a colony at Newera Ellia, in Ceylon, and resided there for eight years. In 1855 he engaged in the organization of the first railway in Turkey; and six years later set out with his wife, from Cairo, on an expedition to discover the source of the Nile. He spent a year in Abyssinia in the exploration of the Blue Nile; and in June, 1862, descended to Khartum, where he organized a party to explore the White Nile. The start was made in December and in the following February, at Gondokoro, Mr. Baker met Speke and Grant, who had come from the Victoria Nyanza. He supplied them with boats for the voyage to Khartum, and continued his own journey by land. On the 14th of March, 1864, nearly a year after leaving Gondokoro, he reached Mvutan Nzige, the lake to which he gave the name of Albert Nyanza.

He navigated the lake and then turned his face homeward, but did not reach Gondokoro until March 23, 1865. For this exploration the Royal Geographical Society awarded to him its Victoria gold medal, and on his return to England in 1866 he was created M.A. of the University of Cambridge, and was knighted.

In 1869 he took command of an Egyptian expedition sent to Central Africa, not so much for exploration as for the conquest and organization of all the countries bordering on the Nile. In this work he was en-

gaged for four years. He visited Cyprus after it became a British possession, and travelled in various countries of Asia and America. His writings on Ceylon, the Albert Nyanza, the Nile Tributaries, Ismaïlia, and others hold their place in the literature of travel.

Sir Samuel was an Honorary member of the Geographical Societies of Paris and Berlin, and of the Italian and the American Geographical Societies; and the Paris Society had honoured him with its Grande Médaille d'Or.

(part of the collection)

AMERICAN GEOGRAPHICAL SOCIETY

NO. 11 WEST 29TH STREET

THE OBJECTS OF THE SOCIETY

THE OBJECTS OF THE SOCIETY are to encourage geographical exploration and discovery ; to investigate and disseminate new geographical information by discussion, lectures and publications ; to establish in the chief maritime city of the country, for the benefit of commerce, navigation, and the great industrial and material interests of the United States, a place where the means will be afforded of obtaining accurate information for public use of every part of the globe. The Society has been in existence since 1852. It has a geographical library of twenty thousand volumes, and a large and very valuable collection of Maps, Charts, and Atlases relating to every part of the world. It publishes a Bulletin, and an annual Journal, and co-operates and interchanges information with two hundred domestic and foreign Geographical and other Scientific Societies.

The initial payment and dues of a Fellow for the first year are \$10 ; and the dues \$10 yearly thereafter. Life Fellowship, free from all dues, \$100.

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